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THERAPEUTIC MONTHLY

A JOURNAL DEVOTED TO THE COLLECTION AND DISSEMINATION OF THERAPEUTIC KNOWLEDGE.

JAMES TYSON, M. D.,
EDITOR.

THOMAS LUTHER COLEY, M. D.,
T. MELLOR TYSON, M. D.,
ASSOCIATE EDITORS.

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Therapeutic Monthly

A Journal of Reliable, Practical and Advance Information for the Physician.

JAMES TYSON, M.D., Editor.

THOMAS LUTHER COLEY, M.D., T. MELLOR TYSON, M.D., } Associate Editors.

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TABLE OF CONTENTS.

EDITORIAL.

Introductory 3
The Attitude of the Profession Towards New Remedies 4
Recent Progress in Gastric Therapeutics 5
The Therapeutic Value of Gelatin 6
The Finsen Treatment of Lupus Vulgaris . 7

ORIGINAL ARTICLES.

Atropin as a Physiological Antidote in Morphin Poisoning. By EDWARD T. REICHERT, M.D., of Philadelphia 9
The Treatment of Disease by the Local Application of Superheated Dry Air. By PRESCOTT LE BRETON, M.D., of Buffalo, N. Y. 22
The Pure Active Principle of Supra Renal Extract and its Wide Range of Applicability in Ophthalmology and Rhinology. By FRANK H. EDSALL, M.D., of Madison, Wis. 27
Carbolic Acid as an Internal Remedy. By S. HENRY DESSAU, M.D., of New York. . 27

Abstracts of Therapeutic Literature . . . 31
Selections 37
Formulae 37
Book Notices 39
Books Received 39
Meeting of the American Therapeutic Society 40

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Introductory.—At no time in the history of medicine has an exact knowledge of the morbid conditions at the foundation of disease been more important than now, and in founding a new journal, of which therapeutics is the primary purpose, it is desired to emphasize rather than minimize this truth. Scientific physicians reasonably look forward to the day when all therapeutics will be rational, and there can be no rational treatment which is not grounded on a knowledge of morbid states. It is, nevertheless, true that empirical methods must be maintained for some time longer.

In casting about us, therefore, for methods in which therapeutics can be developed, one of several courses is open: First, studies of remedies whose physiological action has been investigated and found antagonistic to certain causes of disease — true rational therapeutics. Included among these is the effect of the various forms of serum treatment by antitoxins. Second, studies based on the use of remedies to produce effects which clinical observation has shown to be inherent in them. Among these is included the administration of drugs, like opium, to relieve pain, chloral to produce sleep, digitalis and veratrium for effects upon the heart and circulation. Third, studies of the effects of measures, whose physical properties make it reasonable to suppose they may be useful in certain conditions. Such are the effects of cold in the treatment of fever and feverish conditions, germicides to cure certain parasitic skin diseases, and bactericides in checking infection. Fourth, studies of the action of remedies produced in the pharmaceutical laboratory by synthesis and analysis, whence probable effects are inferred by analogical reasoning. In the present day of rapidly increasing products of the latter kind, some of undoubted value, while others are useless, and others still, though useful, scarcely have a reason for existence, because they duplicate effects without adding to them, no possible amount of clinical opportunity can test even a small proportion, so numerous are they. The determination of the value of such remedies by a sufficient amount of clinical trial is, however, a legitimate field of research, and we gladly offer our columns to such studies, if reasonable. Fifth, preventive medicine comes fairly within the purposes of a journal devoted to therapeutics. Finally, experimental therapeutics, and especially experiments going to prove or disprove the antagonism of drugs, should be encouraged.

Therapeutics in some shape is probably coeval with the history of man, for there is, perhaps, no period in which he has not been subject to illness for which some sort of treatment has been suggested. The thoughtful student naturally inquires why it is that therapeutics is in such an unsatisfactory state after centuries of trial. The answer, in part at least, is near at hand. The chief cause is the difficulty in drawing conclusions as to the effects of remedies in health and disease. In the first place, training of the highest order is necessary to qualify the observer for his task, and comparatively few have it, though the number is increasing with the increased requirement for admission to the study of medicine and with the better discipline of the education itself. Again, there is the inherent tendency to recover from disease always present in human beings as well as animals, which complicates the effect of medicines and interferes with reliable deductions. After all, perhaps, training is the more important requisite, because it qualifies one to allow for the latter difficulty. It may be sufficient at present to name these two obstacles, which are the principal ones that obstruct the honest investigator.

There can be no doubt, on the other hand, that the stimulus excited by systematic effort to develop a knowledge of any branch must aid in overcoming the natural difficulties in the way. We feel, therefore, that this may be one of the results of such a journal as this proposed. We hope also that the systematic effort to collect for our readers well founded and acknowledged therapeutic truths will

be sufficiently successful to make the journal a useful, and, therefore, welcome monthly visitor.

We invite correspondence as well as contributions, on the subject covered by the title of the journal.

The Attitude of the Profession Towards New Remedies.—There are few subjects of greater importance to the profession than the precise determination of the course to be pursued in the employment of new remedies, and especially of such as may be grouped under the broad head of proprietary preparations. There has been too little concerted action on the part of the profession, and too great zeal on the part of the manufacturers of these remedies to make the present position of the question at all satisfactory. There is an unwise tendency on the part of many medical men to advocate the adoption of certain new agents which have been insufficiently tried. The medical journals have been used too frequently with the object of exploiting these new remedies. In many instances these papers have been inspired by undeniable honesty on the writers' parts; on the other hand, too often have the editors been imposed upon and have printed as reliable, what has subsequently been proven to have been a paid endorsement of some new agent based upon purely supposititious data. Indeed, this has occurred so often that there exists what we may be permitted to call a commendable spirit of skepticism as to the merits of this large class of remedies in general. With the increase of size and importance of the commercial, chemical houses of the world, a new order of things has come into being, and the vast field of therapeutic agents is strewn with the wrecks of myriad drugs once lauded highly, while it still contains hosts of others for which extravagant, but as yet unsubstantiated, claims are made. This new development has been, in the best instances, along scientific lines, and the work done in the pharmacological laboratories of certain firms is well worthy of scientific respect and attention. The problem is for us to determine how they shall receive their proper hearing, and how the status of these preparations shall be fixed, adopting those proven to fulfill well-known indications and of which, too, the deleterious action has been carefully determined. In this connection the stand taken by the American Therapeutic Society at its recent meeting in Washington is satisfactory. At this meeting it was resolved, and carried unanimously: "That any therapeutic agent offered for discussion before the Society shall be discussed under its chemical name and not under its fanciful, patented, or copyrighted commercial name." As pointed out by Dr. F. E. Stewart, in his plea for the "Proposed National Bureau of Materia Medica," the time is ripe for decisive action on the part of the profession of America, since under the act of Congress, approved June 4, 1898, a commission was appointed to revise the statutes relating to patents and trade marks. This Commission has presented its report, and the subject comes before the next Congress for debate. Dr. Stewart has long advocated the establishment of a National Bureau of Materia Medica, and in the article in question (see the *Journal of American Medical Association*, April 27, 1901) presents his plans in tentative form in order to call the attention of the profession directly to this important subject. The necessity for some such body which shall have the authority to recommend or disapprove the remedies brought before it for examination is paramount. It is Dr. Stewart's idea that this organization shall be the court of last resort, before which various manufacturers may present their claims according to rules laid down by this body, that they shall be passed upon, and that this decision, bearing the weight of such authority, shall be final. The Commission appointed by Congress observes that many foreign countries exclude from patent protection inventions relating to medicines, but that this exclusion from protection of inventions does not generally extend to those relating to processes or apparatus for their manufacture. They also remark that it has been suggested to them that the United States law should be amended to exclude from patent protection both medicines and chemical products generally, at least so far as these are the inventions of subjects or citizens of the foreign countries which exclude this class of invention from patent protection. Indeed, it has been possible under the present existing patent and trade-mark laws for manufacturers in this country to secure right and title to many preparations not the fruit of their own investigations, but appropriated boldly from foreign laboratories. With the tremendous increase in the number of new preparations, we are brought face to face with the problem of dealing with them. It may be said generally that the following points need definite determination: The problem of uniformity in all our materia medica products and preparations: the question of monopoly in medical products and preparations: the question of copyrights and patents, and the proper commercial classification of medicines. No less important is the question as to how we shall specify in prescribing, and whether we shall use process names, brand names, or chemical names, which are often unwieldy. The introduction of new medical products to science is an absolute necessity in view of the excellent work done in the laboratories. But it will be necessary for us to have fixed rules and methods of procedure, and it should only be by following these that new remedies may be entitled

to a hearing. This question was brought up at the recent meeting of the American Therapeutic Society, and Dr. Stewart's plan for the establishment of this National Bureau was referred to the Judicial Council for favorable action, and a committee was appointed to investigate the subjects. It is the duty of the profession, we believe, to give this matter serious consideration previous to some definite action which will be urged at the next meeting of the American Medical Association in St. Paul.

Recent Progress in Gastric Therapeutics.—Of the physician of not so long ago, and even of many a one of to-day, it may be truly said that he "poured a drug of which he knew little into a stomach of which he knew less." The rapid progress in the physical methods of diagnosis of gastric affections, especially since the simplification of the chemical examination of the stomach-contents, is gradually placing gastric therapeutics on a thoroughly scientific basis. In this domain the physiologist has rendered most valuable service by his careful investigations without which therapeutics would still remain, as of yore, purely empirical. To show the influence these investigations exerted on our therapeutics it is sufficient to mention the following facts: It has been demonstrated, for instance, that the mucous membrane of the stomach possesses little if any absorptive power; consequently, the use of large quantities of liquids with a view of their absorption in the stomach is prejudicial. A liquid diet, therefore, is actually contraindicated in dilatation of the stomach. In view of this fact, Albu (*Deutsche Medicinische Wochenschrift*, 1900) recommends a dry diet in this affection. The food should be nutritious, administered in small quantities at frequent intervals. To supply the deficient quota of water, Mehring (*Therapie der Gegenwart*, 1899) suggests the use of rectal injections. The question of the discharge of the chyme into the duodenum is another important one. On the proper function of the pylorus depend not only intestinal digestion, but the presence or absence of gastric dilatation. It has been shown by Serducow (*St. Petersburg Dissertation*, 1899), that the opening and closing of the pylorus depends entirely on the degree of the acidity of the gastric contents. When the latter are alkaline in reaction, they are expelled very rapidly, less so when neutral and quite slowly when acid. As soon as the acid chyme reaches the duodenum the pylorus closes to be opened again when the acidity is neutralized by the alkaline intestinal juice. This fact explains why we find in hyperacidity distention of the stomach with the accompanying symptoms of pressure on the diaphragm. This distention is due not to fermentation, as is commonly and erroneously supposed, but to the prolonged closure of the pylorus brought about by the hyperacid chyme. It also makes clear the clinical observation that gastric dilatation may and does accompany hyperacidity. The fallacy of using hydrochloric acid or antiseptics with a view of inhibiting "fermentation" is made self-evident. Bicarbonate of soda or any other suitable alkali should be used to neutralize the acid chyme. In extreme cases the latter can only be removed by lavage.

The effect of diet on gastric secretion has also claimed the attention of the laboratory-worker, and the results of his investigations have an important bearing on therapeutics. Thus, Virshillo (*Vratch*, 1899) found that cod liver oil inhibits the secretion of gastric juice. The same effects he found (*Vratch*, 1900) in the case of butter. However, while the secretion of pepsin and hydrochloric acid is diminished, peptonization goes on with greater facility, owing to the prolongation of the time during which gastric secretion takes place. Similar observations were made by Strauss and Backman, in Germany, and Hemmeter, in this country. As a result of these investigations, fats, especially butter, are being accepted by the clinician as the food *par excellence* in hyperacidity.

The crowning success in digestive physiology and therapeutics has been achieved by a number of Russian investigators, who, under the leadership of Prof. Pawlow, have placed this intricate subject on a sound experimental basis. For the last five years Prof. Pawlow and his pupils experimented on dogs at the Institute of Experimental Medicine in St. Petersburg, performing some of the most ingenious operations. These experiments, practically unknown to the European, are pregnant with results which will no doubt revolutionize our present teachings. Among other things it was learned that dogs can be fed psychically; in other words, the mere presence of food will excite an abundant gastric secretion, varying with the kind and consistency of the food. This fact, by the way, explains the physiology of appetite which is largely a mental manifestation. Both Pawlow and Lukianow suggested that the gastric juice of the dog thus obtained may be utilized for therapeutic purposes. Finkelstein (*Vratch*, 1900) took the hint, and having obtained the juice by Pawlow's method, employed it in 22 cases of various gastric affections with most happy results. In 2 cases of gastric cancer the vomiting diminished both in amount and in frequency; the pain after eating became considerably lessened and was frequently absent; the appetite increased, while the eructations and burning diminished; at the same time the nutrition improved, and in one case the patient gained

3 pounds in 3 weeks. In 8 cases of gastric catarrh the juice had a *curative* effect. The appetite improved in all, eructations and burning ceased; the feeling of heaviness in the epigastrium was entirely removed by a few teaspoonfuls of the remedy; the pains after eating were also considerably ameliorated. In cases associated with decreased motility and dilatation of the stomach, improvement set in at once, while the gain in weight amounted in some to 10 pounds in the course of 3-5 weeks. In 2 cases of anemia associated with digestive disturbances, the amelioration of the latter brought about a simultaneous improvement in the former. A beneficial effect was also noticed in cases of typhoid fever. The doses employed were from 50 to 200 cc. before, during or after eating. Similar results were obtained by Le Gendre, Fremont, Leyden, Launois, Barth, Huchard and others. Mayer (*Zeitschrift fuer Diaetetische und Physikalische Therapie*, Vol. 4), reports a case of achylia gastrica in which the gastric juice of a dog obtained from Prof. Pawlow was used with exceptionally good results. There seems to be no doubt that in the near future this remedy, which is simply a from of organo-therapy, will replace the other digestive ferments which are usually inert and at best only a glycerin solution of some portion of the gastric mucous membrane.

The Therapeutic Value of Gelatin.—It is well to weigh carefully the claims of any new remedial agents before employing them, and to this end the **Therapeutic Monthly** will endeavor, as occasion arises, to present to its readers the full right and title of such remedies to general employment. We have the right to demand what is the possibility of harm, as well as of benefit, and to weigh carefully the reported cases, especially those in which bad results have arisen from the use of some new agent. We believe this to be the special function of a journal in the field which we shall endeavor to cover, and our columns will always be open, and criticism invited upon all subjects presented.

Gelatin is not now regarded as possessing any food value, although claims have been made declaring that it increases vital activity in a manner comparable to albumin. It is an albuminoid derivative of the proteids *ossein* and *collagen*, obtained by prolonged boiling, from bones, tendons, cartilages, and other fibrous animal structures. Its composition is similar to that of albumin, but it does not yield proteids. Its purest form, and the one that is official, is *Ichthyocolla*, (Isinglass), the swimming-bladder of several species of sturgeon. We are especially interested, not in the question of food value of gelatin, or its antidotal properties against iodin, bromin and the alums, but in the discovery of Dastre and Floresco, that when applied locally gelatin hastens the coagulability of the blood. These authors distinguish between coagulation of the blood and gelatinization, and state that an amount of gelatin so small that it cannot cause gelatinization of the blood greatly hastens coagulability. The use of a solution, 2% to 10% dissolved in a solution of chlorid of sodium 1 to 100 in water for checking hemorrhage, was recommended by Bertino, in 1889 (*Annale de ostetricia e ginecologia*, p. 833). He considers that it is not only a coagulator of the blood, but a vaso-motor constrictor as well.

In 1897 Paul Carnot advocated the use of gelatin as a hemostatic, employing this agent both locally, and to effect the coagulability of the entire blood mass. He believes that both the properties of coagulation and gelatinization should be utilized, and it is because this substance possesses this double power that he regards it of more value than calcium chloride. As a local hemostatic, 5 parts of gelatin are dissolved in 95 parts of normal salt solution. This is to be rendered sterile by two separate boilings of 15 minutes each, but the temperature should not be raised above 239° F., for at that point the gelatinizing properties are destroyed. In cases of epistaxis in children, Carnot injects into the bleeding nostrils 40 c.c. of the solution prepared as described, and then plugs the naris with a tampon wet with the same solution. In one case all of the methods employed had been futile, and the child was nearly bloodless, but the gelatin arrested the hemorrhage at once. Carnot recommends that the solution be used at body temperature, for if the solution be too hot gelatinization would be rendered slower, and it is to be remembered that gelatin acts by contact with the blood. The heat itself would arrest the hemorrhage, and the blood and gelatin not being in absolute contact, no clot would form in the vessels. For surface wounds, Carnot merely moistens the part with a few drops of the solution, and leaves in place a short time some material impregnated with it. Hemorrhage from the rectum, and varicose veins may be treated in the same manner, but gelatin being digestible, is not indicated in cases of gastric hemorrhage. Injections of gelatin solution with careful antiseptic precautions may be used in uterine hemorrhage. Carnot performed a series of experiments upon the lower animals to determine the effect of gelatin in severe hemorrhages, and he found after resecting portions of the liver that gelatin very speedily arrested the hemorrhage, and ligatures were unnecessary.

About a month before the appearance of Carnot's paper, Lancereaux presented before the Academy of Medicine a case in which gelatin injections had been employed with marked success in a patient with a

large aortic aneurysm. In the course of two months 12 injections, of 150 c.c. each, were given in the gluteal region, the aneurysm shrank markedly in size, and the case was considered almost cured. Lancereaux's work prompted T. B. Futcher to follow the same line of treatment in 9 cases of aneurysm of the aorta. This was carried out in the Johns Hopkins Hospital. Futcher reports that the immediate effect of the injection is frequently severe and protracted pain. Sometimes chills occur from 2 to 4 hours after the injection, and the temperature may rise as high as 103° F. Suppuration did not occur, and in only one case was there any local reaction. None of the cases were cured, but in one abdominal aneurysm the mass was somewhat reduced in size, and in seven the subjective symptoms were much improved. A. Fraenkel reports a case of aneurysm of the aorta in which gelatin injections were given. Perforation was feared in this case, but the symptoms rapidly improved after the employment of the injections. The pulsation diminished, the swelling practically disappeared, and there was apparently almost complete cure.

Heymann used subcutaneous injections of gelatin solution in the case of a patient with hemophilia, in whom there had been excessive hemorrhage after removal of the tonsils. The bleeding ceased, but later recurred, but it was finally controlled with the gelatin. All other treatment had been ineffectual. J. B. Nichols reports a case in which there was a family history of hemophilia and prolonged bleeding after a wound in the wrist. It did not cease after the application of the tourniquet, but was rapidly controlled by pouring gelatin into the wound. Arcangeli gave subcutaneous injections of a 2% solution of gelatin in normal salt solution in two cases of purpura hemorrhagica, which occurred in girls 13 and 10 years of age. The largest dose used was 20 c.c. The hemorrhages ceased entirely after several injections. Schwabe reports a hematuria in a patient with recurrent nephritis, in which all drugs failed save gelatin. Speedy elimination of the symptoms promptly followed infraclavicular injections of 7 drams of physiological salt solution containing 2% of pure gelatin. This was followed by the daily administration for a week of a 10% gelatin solution. Guttmann, of Emmendingen, reports a favorable result in a case of melena neonatorum from the use of gelatin. He dissolved three sheets of gelatin in a quarter of a liter of warm water, and administered one-half by the mouth and one-half by the rectum. J. Buchholz reports a case of aneurysm of the abdominal aorta, in which very marked improvement followed the administration by the mouth of a 10% solution of gelatin. On the other hand, Freudweiler reports two cases of hemorrhagic nephritis, in which the use of gelatin brought on a marked hemoglobinuria and increased the amount of albumin and the number of tube casts. In another of his cases an attack of uremia followed the use of gelatin. Scherwinsky reports four cases of aneurysm of the aorta, in which he used gelatin injections without apparent effect. Commandeur has reported to the Society of Medical Sciences of Lyon (meeting of February 13, 1901) two observations upon the treatment of melena neonatorum, by serum gelatin. The first infant weighing 2580 grams, was expelled spontaneously in a breach presentation. The following day there was found in the stools a considerable quantity of blood mixed with the meconium. A rectal injection of 7 c.c. of serum gelatin was practiced. The infant was then placed in the incubator. It nursed poorly, and artificial feeding was necessary, but the hemorrhage did not recur. The child's general state was very bad during the first week. The initial temperature which was 35.8° C., did not reach normal for ten days, but recovery followed. The second case was that of an infant weighing 2780 grams, delivered after version of a shoulder presentation. It had on the tenth day an elevation of temperature to 38.2° C., which fell on the day following to 36.8° C. The third day black blood was present in the stools. A rectal injection of 8 c.c. was practiced. The hemorrhage did not occur again, and the infant recovered rapidly without recourse to the incubator or to gavage. It had gained 200 grams on leaving the hospital, fifteen days later. The preceding reports, quoted from the literature, make no claims to being exhaustive, but they would seem to illustrate the unquestioned value of gelatin as a reliable hemostatic. It is well to bear in mind the precaution in its use, pointed out by Carnot, viz., that it should not be injected directly into the circulation, because of its liability of producing massive clotting.

The Finsen Treatment of Lupus Vulgaris.—The results of a great number of experiments which have been performed since 1877 upon the bactericidal power of light may be summarized thus: Sunlight, and electric light, to a less degree, have a destructive effect upon bacteria, and this effect is not dependent upon temperature; further, the ultra-violet rays have the most decided bactericidal power. Koch, Marshall, Ward and others have stated that direct sunlight will kill tubercle bacilli after exposures of varying time from a few minutes to many hours. These facts being well recognized, the profession learned with approval Finsen's treatment for lupus vulgaris and other skin diseases of bacterial origin. Sir John William Moore is authority for the statement that the employment

of red light, as suggested by Finsen in the treatment of smallpox and other eruptive fevers, is not new, but that it was employed as far back as the fourteenth century by one John of Gaddesden. To Finsen, however, belongs the credit for having utilized the ultra-violet rays upon a basis of scientific fact.

We are indebted to Dr. Edward Stapleton, of Dublin, for a candid criticism of the light treatment of lupus. Dr. Stapleton has followed carefully this method of treatment as carried out in the London Hospital, and under Mr. Malcolm Morris' supervision at Notting Hill Gate. A decided limitation to the application of the treatment arises from the fact that the rays must be accurately focused upon a plane surface, and mucous membranes have not been found suitable for treatment on account of the irregularity of their surfaces, and because the necessary pressure cannot be borne. The same reason excludes the septum nasi. The frequency with which these parts are attacked by the disease, and the fact that they cannot be directly treated by the Finsen method, may preclude its adoption in many cases. It has been found necessary to overcome this obstacle, and the X-rays have been frequently employed. Hewlett, and many others, deny absolutely the deleterious action of the X-rays upon bacteria, but practically it has been found that a number of cases have been decidedly benefited by their use. Many collateral therapeutic means have found favor in connection with the light treatment, and of these thyroid feeding may be mentioned. Finsen, however, believes that all supplements to the light treatment merely save time.

Stapleton presents these two questions: First, is the curative effect really produced, as is claimed, by the bactericidal action of light? Second, will the Finsen treatment, with the necesary time and expense involved, show a gain over the methods already at our disposal, sufficient to justify its adoption? He points out that the irritation of the skin due to sunlight was believed formerly to be caused by the heat-rays, and consequently received the name *erythema caloricum*, but it is now known positively that the inflammation is not due to the heat-rays, but to the so-called chemical rays, and in consequence the term *erythema caloricum* has been changed to *erythema solare*. It has been claimed for the light treatment that it is painless, yet in many cases a painful artificial *erythema solare* is produced after each treatment, which appears in about twelve hours. Stapleton believes that the curative effect of the treatment is due to this inflammatory reaction, and that the bacteria are killed incidentally. He compares this result to the occasional disappearance of malignant tumors, especially the sarcomata, after an attack of erysipelas at the site of the growth, and quotes Jackson, who records that even in cases of lupus vulgaris, complicated by erysipelas, the lupus has disappeared. Finsen lays little stress upon the curative action of this erythema. With special reference to the treatment of smallpox, Finsen has likened the sensitiveness of the skin to that of a photographic plate, and he excludes white light from the room on account of the irritation of the ultra-violet rays. Stapleton inquires: Why, if the skin is so very sensitive, should the face and hands be most affected by lupus, since they are the parts which are most exposed to the light? Again, if the light depends upon bactericidal action for its therapeutic value, how do we account for the excellent results of the Finsen treatment in cases of lupus erythematosus, in which it is by no means certain the organisms exist? It is stated that the Finsen method is especially applicable in the early and superficial cases, but it is but fair to allow that other methods of treatment might do great good in this class of cases also. The expense of the Finsen treatment, and the fact that it may have to be continued for one hour each day for from three to twelve months, are factors to be considered. Considering the subject conservatively, we believe we cannot do better than conclude with Dr. Stapleton that the artificial *erythema solare* should receive much of the credit for the results achieved, yet it is to be hoped that the directing of professional attention to this subject may soon furnish us with the means of utilizing fully the undoubted bactericidal action of the ultra-violet rays.

Huckleberry Extract.—Daxenberger (*Aerztliche Rundschau*, Nr. 34, 1898, quoted from *Blaetter fuer Klinische Hydrotherapie*, April 1901, No. 4, p. 105) reports astonishing results obtained with the Extractum Myrtilli. "Myrtillin" both internally and externally. The author observed these effects at the clinic of Professor Winternitz and confirms them by his experience in private practice. In the various forms of eczema, including the mycotic variety, and particularly in children, as well as in excoriations at the angles of the mouth and eyes the following treatment was instituted: The diseased areas are first scrupulously cleansed, best with normal salt solution, carefully dried and painted with a thin layer of the syrupy extract; a dusting powder may be also subsequently added. This covering quickly dries, forming a sort of varnish, and will suffice without further bandaging. In this manner it is possible after painting eczematous areas to institute curative results from 24 to 48 hours. In urticaria and herpes zoster the extract has an analgesic effect. Recently in a case of chronic gonorrhea, in which the customary astringent solutions had been unavailing, the author succeeded in obtaining marked improvement by injections of a saturated aqueous solution of myrtillin, employed three times daily for ten to fifteen minutes. Internally, in acute and chronic intestinal catarrhs of children, good results were obtained by tablespoonful doses of myrtillin added to the ordinary beverages. The author recommends the further employment of the remedy on account of its efficiency, convenient applicability, absolute harmlessness, and cheapness. [M. R. D.]

Original Articles.

ATROPIN AS A PHYSIOLOGICAL ANTIDOTE IN MORPHIN POISONING.

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The belief that atropin is among the most reliable and powerful agents in counteracting the lethal actions of morphin and opium had its inception at a time when our knowledge of pharmacodynamics was in a most primitive state, and has been passed down from year to year almost without serious question, notwithstanding the continually accumulating evidence not only of its utter unreliability, but also of its dangerousness. Certain manifest but superficial differences in the physiological properties of atropin and morphin, as shown in the effects upon the pupil, pulse, arterial pressure, respiratory movements, body temperature, psychic activity, etc., naturally indicate a widespread and marked antagonism, and therefore lead to the conclusion that they are mutually antidotal; but the actions of such poisons are so complex, and oftentimes so obscure, that conclusions in the absence of adequate scientific data are to be regarded *sub judice*. Morphin was long ago practically discarded as an antidote in atropin poisoning, and whether or not atropin exerts the powerful antagonistic actions claimed for it in morphin poisoning is a contended point, there being abundant evidence to indicate that while in some cases its value was beyond question, in others it was useless or injurious. In morphin poisoning in man death is almost invariably due to respiratory failure; hence, the main object in the treatment is to maintain the respiratory movements. For this purpose atropin and other preparations of belladonna have had extensive use, because of the prevalent view of their being reliable, prompt and powerful respiratory stimulants; but that this belief is without adequate foundation is clearly shown by clinical, toxicological and experimental data. In a previous article (*University Medical Magazine*, 1891, Vol. III, p. 207), attention was called to this subject, and in the present contribution it is proposed to treat somewhat in detail, and from a broader aspect, the important toxicological relations of these two substances. To this end will be considered *seriatim:*

I.—The Actions of Morphin upon Man and the Lower Animals.

II.—The Actions of Atropin upon the Respiratory Movements, Circulation and General Metabolism in Man and the Lower Animals.

III.—Is Atropin Valuable or Dangerous in Morphin Poisoning?

I.—The Actions of Morphin upon Man and the Lower Animals.

The actions of morphin upon man are sufficiently well known, so that it is needless to refer to them in detail. The actions upon the lower animals are in certain features different from those observed in man, and it is therefore essential that these peculiarities and their causes be recognized before studies can intelligently be made of antidotes, and their results applied to the treatment of poisoning in the human being. These differences are due to certain peculiarities in the physiological properties of the poison, and to the degree of organization and other differences pertaining to species and individuals, so that a given action may vary widely under certain conditions in intensity and in other respects. Thus, the cerebral depression is, as a rule, relatively more marked the higher the animal in the scale of life, and the spinal phenomena the reverse; psychic excitation is normally observed in man only, if at all, during the first stage of the poisoning, but in certain of the lower animals it may be present during the second stage, and even in the form of marked delirium; morphin never excites the respiratory movements in man during the second stage, but in dogs this is an almost constant phenomenon after a variable period of respiratory depression; in man convulsions and other motor disturbances are rare, while in the lower animals they are constant phenomena, etc. As a matter of fact, the actions of morphin are in certain respects remarkable, and, as a whole, strongly suggest the conjoint activities of *two entirely distinct poisons*, one being a marked general *depressant*, and the other a marked general *excitant*, the actions of one dominating or completely masking those of the other in accordance with the peculiarities of species and individuals, and the dose. The excitant group of actions are manifested chiefly in wakefulness, delirium and other forms of psychic excitement; increased cardiac, respiratory and secretory activity; increased temperature; increased reflex excitability; twitchings, jerkings, forced movements, clonic and tonic convulsions, etc. The depressant group are shown in sleep and other evidences of psychic depression; circulatory, respiratory and secretory depression; lowered temperature; diminished reflex activity, motor collapse, etc. It should be clearly understood that the actions which bring about these strikingly opposite effects are, to an important extent, coexistent, and not that the excitant actions merely precede those of depression—in other words, that there is simply a primary stage of stimulation and a secondary stage of depression. If we recognize this coexistent condition of general excitation and general depression, and keep in view the peculiarities of species and individuals and the natural variations in the effects caused by different sized doses, it will readily be appreciated why in some people and in some species morphin is an intense psychic and motor excitant, and why in others the reverse, etc.

The toxic phenomena exhibited by various species show that there are three distinct stages, each being well-defined, and each more or less modified, not only in each species, but in different individuals of the same species.

The *first stage* is one of *excitement*, chiefly psychic. In man and in the dog this stage is usually very brief and often unnoticeable, but sometimes it is pronounced, and delirium may be present. In the cat, horse and mouse,* it is characterized by increased

*For further details of the actions upon different species, the reader is referred to the articles by Harley (Old Vegetable Neurotics, 1869); Guinard (Comptes-rendu de l' Academie de Science, 1880, T. CXL., p. 981); Koelliker (Virchow's Archiv, 1856, Bd X, S. 248); Albers (Virchow's Archiv., 1863, Bd. XXVI., S. 229); Charvet (Pareiera's Mat. Med. and Therap., 1854, Vol. II, p 1085, Phila.); and to articles quoted in this paper.

reflex excitability, intense restlessness, increased respiratory activity, increased pulse-rate, increased temperature, and even delirium. In the frog is noted decided restlessness and exalted reflex excitability. The excitation which characterizes this stage is in man essentially feebly cerebral, but in the lower animals it is cerebro-spinal, the spinal element dominating in proportion, as a rule, as the species or individual is lower in nervous organization; thus, in the frog and mouse, the excitation is almost solely spinal; in the cat, horse and dog, it is cerebro-spinal; and in man it is cerebral. When any hypnotic effect is produced in the cat, horse, mouse and frog, it is, as a rule, relatively transient, and constitutes a less impressive, important and characteristic feature of the toxic phenomena than the effects of excitation; while in man we note the opposite.

The *second stage* is in man and in the dog one of marked psychic and physical *depression*, which is characterized by lethargy, sleep and weakness; but in some species and in some individuals, it is one of more or less marked psychic and physical excitement. It is in reality one in which coexist excitant and depressant states, as in atropin poisoning, the one masking the other, as the case may be, depending mainly upon species and individual idiosyncrasy. In man psychic excitement is uncommon during this stage, and motor excitement is very rare. In the dog the only important manifestations of cerebro-spinal excitation are, as a rule, twitches, jerks and starts, until near the end of the stage, when motor disturbances may be marked; but in the cat, the effects of excitation are so intense as to completely mask the depressant state, so that instead of the quietude and sleep normally observed in man and in the dog, there is intense restlessness, exaggerated reflex activity, delirium, etc,; finally, in the mouse there is a striking exhibition of this coexisting excitation and depression in the general excitement is associated with profound weakness, or even paralysis of the hind legs. In one dog late in this stage the same paralytic-convulsant condition may be noted, the fore-part of the body being at brief intervals in convulsive movements, while at the same time the hind legs are motionless and apparently absolutely paralyzed. This paralysis, however, gradually passes off, and with its disappearance is introduced the final stage of poisoning.

The *third stage* is a stage of *convulsions*, except in man. In man this period is rarely like that observed in the lower animals, because in him the depressant actions upon motorial functions are more powerful than those of excitation; hence, the latter are latent, or completely masked, so that the profound depression of the second stage continues without motor interruption, as is often the case in atropin poisoning in mammals, and life gradually ebbs away in a progressing paralysis of all functions. The third stage in man is almost without exception a continuation of the second stage progressively developed until death.*

*Morse (Pacific Medical Journal, 1876-77, Vol. X, p. 56), records a case of opium poisoning in a man in which, after a well-developed second stage of poisoning, "fearful spasms" occurred, in the intervals of which he was in a state of motor collapse. Althaus (Diseases of the Nervous System, 1879, p. 135), states that in infants and in the lower races of mankind, as in the negro and Malays, convulsions are observed after the ingestion of opium.

The phenomena of the first and second stages of morphin poisoning in man and in the dog are, as a whole, fundamentally the same: The transient cerebral excitation; the quietude, lethargy and sleep passing into stupor; the slow, deep respiratory movements; the slow, full pulse; the lowered arterial pressure; the fall of body temperature; and the muscular weakness are common to both. It is only at or towards the end of the second stage that the phenomena in man and in the dog widely depart. In man, the third stage is a continuation of the second stage which progresses until final dissolution, and it is but rarely that the poisoning terminates in a stage of convulsions; while in the dog, the depression of the second stage gradually gives way to increased respiratory activity, increased reflex excitability, and to jerkings, restlessness and other forms of motor excitement, which, in turn, soon pass into frequently repeated attacks of tetanic and clonic convulsions, forced movements, etc. During the third stage in man, the depression deepens; the stupor passes into coma; reflex excitability absolutely disappears; the respiratory movements are feeble and occur only at long intervals, and may be stertorous; the pulse is usually frequent and feeble, and the arterial pressure low; the body-temperature continues falling; the skin is cold, etc.

Keeping in view the two entirely distinct, independent, coexistent and opposite types of the actions of morphin, it is easy to understand why in different species and individuals its effects should be at variance. In the first stage in man, in the first and third stages in the dog, and generally throughout all three stages in frogs, cats, mice and horses, the excitant type dominates; while during the second stage in the dog, and during the second and third stages in man, the depressant type holds mastery. In the horse and mouse the hypnotic and tetanic actions are so nearly balanced, writes Harley, that if the hypnotic action were much weaker, or eliminated, morphin would not differ in its action from thebain or strychnin. The recognition of these opposing actions of morphin bears with it an explanation of the diversity in the effects observed upon the pupils of different species and individuals. Thus, in the dog the pupils are sometimes unaffected, sometimes contracted, but generally more or less dilated; in the cat and horse they are dilated; and in man, contracted. In the dog the contracter and dilater elements are ordinarily so nearly balanced that the latter but slightly dominates, thus giving rise to a partial dilatation; at other times, owing to a relatively greater responsivity of the contracter element, the pupils are contracted, etc. In the horse and cat the dilater element completely masks the other, and in man the reverse. It is the coexistence of these opposing actions in the dog, one of which being masked, that prevents the complete dilatation caused by atropin, and the complete contraction by eserin. In man the dilater element of morphin is as completely overcome, as is the constricter element in atropin poisoning.

From the foregoing rough outline of the actions of morphin it is evident that of the various species named, the dog is the best adapted to the study of this poison and its antidotes; and, moreover, that

it is only during the *second stage* of the poisoning that the results of the studies of antidotes can intelligently be applied to the treatment of morphin poisoning in man. It, therefore, is desirable to consider somewhat in detail the phenomena of the second stage of poisoning in the dog in so far as they bear upon toxicology.

The lower animals are much less susceptible to morphin than man. The mean minimal lethal dose *subcutaneously* injected in the *pigeon* is 0.55 gram. per kilo; in the *rabbit*, 0.25 gram per kilo; and in the *dog*, 0.35 gram per kilo. From this it will be observed that to kill a dog weighing 10 kilos, about 3.5 grams would, as a rule, be required. The mean minimal lethal dose in a man weighing 70 kilos is probably about 0.2 gram, or 0.003 gram per kilo; therefore, in relation to body-weight, morphin is nearly 120 times more powerful lethally to man than to the dog.

When a dog is given subcutaneously 0.01 gram of morphin per kilo, or what might be considered an ordinary therapeutic dose, in the course of a few minutes the first evidences of the poison appear in the form of slight restlessness, swallowing and licking movements, a desire to hide, and a mild state of psychic excitement, in which he seems somewhat dazed or bewildered. Marked muscular weakness, especially in the hind legs, rapidly comes on; retching, vomiting, salivation, urination and defecation may occur; and sleep ensues, from which the animal is aroused by a start when irritated. As the sleep deepens, weakness increases, reflex excitability lessens, and he is awakened less readily, and immediately relapses into slumber. After a variable period the sleep passes off, and he lies with eyes and mouth partly open, in a state of decided muscular weakness, especially in the hind legs, and appears so distressed as to suggest suffering.

The respiratory movements become, as a rule, less frequent and deeper at once, and so continue for a longer or shorter period; but sometimes there is a transient primary increase, which may be very marked. The decrease in the respiratory movements is almost invariably followed after a variable period by a marked and persistent increase, in many cases to an enormous extent (150 to 300 a minute), and this increase often appears suddenly without apparent reason, rising in one case from 24 to 186 in three minutes, and to 234 in ten minutes. An outburst of respiratory excitement so sudden, and in conjunction with the decided tendency to an increase of the rate before and after the respiratory depression of the second stage, leads to the belief of an unstable state of excitability of the respiratory center, and that complex and powerful antagonistic factors are coincidentally acting upon the respiratory apparatus—one factor tending strongly to increase activity, and the other to decrease it, the former gaining mastery sometimes during the early part, and almost invariably during the later part of the second stage.

The pulse-rate may at first be increased more or less decidedly, running up to 200 or more; but generally from the first it is decidedly lessened and the beats increased in fullness.

The body-temperature almost invariably persistently falls, not infrequently as low as 33° or 34°, but upon the appearance of a recovery of normal reflex excitability there is a tendency towards a steady increase, although it may continue subnormal for two or three days or more. Occasionally, a rise of temperature is observed during the first stage and first part of the second stage.

The pupils are generally *dilated*, but rarely or never so fully as by atropin or cocain. Sometimes they are contracted, but never, in my observations, to the pin-hole size observed in man.

The most pronounced and typical effects of morphin upon dogs when given in doses of sufficient size to develop fully the toxic phenomena of only the first and second stages are, sleep from which the animal may be awakened without difficulty; great muscular weakness, especially in the hind legs; a decrease of reflex excitability; a decrease in the respiratory rate which is followed after a variable period by a marked increase; a decrease in the pulse-rate accompanied by a full pulse, which may be preceded by an increase in the rate; a steady and marked decrease of body temperature and of general metabolic activity; and partially dilated pupils.

The fact that morphin causes death by a direct paralysis of the respiratory center is so universally recognized that the efforts to find antidotes have been directed almost solely to respiratory excitants, and it is not surprising that with so superficial a knowledge of the antagonistic properties of morphin and atropin, apparent or real, that the possible value of atropin as a morphin antagonist should appeal at once to the toxicologist. In fact, no single agent has had use so extensive in morphin poisoning in man as atropin, or which commands confidence so general. Indeed, it is practically the only one of the so-called morphin antidotes that has been the subject of serious experimental study in morphinized animals. As a matter of fact, the direct action of morphin on the respiratory center has so entirely dominated every other in the minds of the clinician that other actions of possibly equal or greater importance have been more or less neglected or even ignored. Illustrations of this are shown, for instance, in many deaths that have occurred because of the failure of the clinician to maintain the body-temperature at a standard at which it is possible for the metabolic processes of the higher centers to continue.

In studying the antidotal properties of atropin in relation to morphin, it is of great importance to recognize: First, the general type or picture presented by the actions of morphin upon mammals, as a whole; second, the coexistence of the excitant-depressant states; and, third, the wide differences in the phenomena, and their causes, of the different stages in man and in the lower animals. It must be obvious from the foregoing that an antidote which is effective in the cat and mouse during any stage, or in the dog during the third stage, must prove not only worthless, but harmful in man; and that, on the other hand, one of value in the dog during the second stage should prove of value in the second and third stages in man; and, finally, that if a masked or latent convulsant state exists in man during the second and third stages, which is probable from the presence of twitches, etc., and by its existence in the lower animals, it is more than likely that the administration of powerful motor excitants, especially in very large doses, may be attended with

danger, because of the now combined convulsant actions of the antidote and the morphin.

II.—(A) **The Actions of Atropin upon the Respiratory Movements.**

A superficial examination of the studies of atropin upon the respiratory movements leads one into the midst of apparently hopeless contradictions, but further inquiry will bring to light the most important factors involved in these conflicting results and conclusions; and, especially so, if it be recognized that the physiological properties of atropin closely resemble those of morphin, to which I will refer later.

Actions upon Man.—The actions on man are of a very variable character. Mitchell, Morehouse and Keen (*American Journal of the Medical Sciences*, 1865, Vol. I, p. 67) found after giving atropin, that "the rate of respiration did not increase as the pulse-rate rose. Indeed, in many instances the number fell or remained unaltered, while the pulse ascended from 70 to 120 per minute." Harley (*Old Vegetable Neurotics*, 1869, p. 241) states that medicinal doses have no influence whatever on the respirations. In a study of twenty-five cases of atropin and belladonna poisoning selected at random from various medical journals, I found (*loc. cit.*) that in but three were the respirations stated to be increased, while in the others they were recorded as being natural or regular, or there was no note of any kind. No evidence has since been found to indicate that the observations by Mitchell, Morehouse, and Keen, or by Harley, or by myself are in any way incorrect or misleading. The actions on the respiration-rate in man are, therefore, uncertain—sometimes increasing, sometimes decreasing, and at other times not materially affecting it, etc.

Actions upon Normal Animals.—Harley (*loc. cit.*) found that in the *horse* atropin has no appreciable effect on the respirations, and that in the *dog* there is occasionally witnessed a little transient panting. Bezold and Bloebaum (*Untersuch. a. d. Physiolog. Lab. in Wuerzburg*, 1867, Theil I, S. 1-65) in five experiments upon intact *rabbits* obtained variable results. The doses ranged from 0.01 to 0.07 gram, injected intravenously. In every one a primary fall occurred: From 92 to 72, 104 to 96, 84 to 44, 58 to 48 and 124 to 40 respirations a minute, respectively, the decrease always being followed by a rise which went above the normal. (Table I.)

In two experiments the normal was recovered within three minutes; in one, within about thirty minutes; in one, within forty-five minutes, and in one, not until after the lapse of one hour and fifty-five minutes. In only three of the experiments did an increase in the respiration-rate occur within the first half hour, and in one of these the rise was insignificant. After section of the pneumogastric nerves, in three experiments on *rabbits* and one on a *dog*, an immediate increase was noted in each, but in only one did the rise ever go beyond the normal. (Table II.) In the five experiments on intact rabbits the results are uniform in so far as an immediate decrease in the rate occurred in each experiment, and in that this subnormal rate, which lasted for from three minutes to nearly two hours, was followed by a rise which always more or less exceeded the normal.

In seven experiments which I made on *dogs* (*loc. cit.*), in five the rate was increased sometime during the observations. In only one of them was there noted the primary marked decrease recorded by Bezold and Bloebaum in their research on rabbits. In my experiments in which the vagi were cut, the rate rose in one from 11 to 114, in another from 11 to 84, and in another from 13 to 243. In each of these a fall preceded the rise, indicating a transient inhibition of the respiratory center, the cause of which is obscure.

Meuriot *L'Etude de la Belladone* [Thesis], Paris. 1868, p. 69), in twelve experiments on eleven young *dogs* and one *cat*, in which the doses with two exceptions varied from 0.005 to 0.05 gram, the respiration-rate was increased from the first in every experiment. (Table III). In the first six experiments, which were upon intact animals, the mean normal rate periment, including six in which the pneumogastric nerves were cut, the respiration-rate was increased from the first. (Table III). In the first six experi-

TABLE I.

Condensed records from Bezold and Bloebaum's experiments on intact rabbits.

No. of Experiment	Animal	Atropin (grams)	Respiration Rate before Atropin	Respiration Rate after Atropin.		
				During injection	Rose to normal	Reached
1	Rabbit	0.01	92	fell to 72	in 8 min.	186 in 60 min.
2	"	0.03	104	" 96	" 8 "	125 " 15 "
				In 2 min. after		
3	"	0.05	84	fell to 44	" 45 "	140 " 107 "
				During injection		
4	"	0.05	58	fell to 48	" 8 "	104 " 27 "
5	"	0.07	124	" 40	" 155 "	151 " 170 "

TABLE II.

Condensed from the records of Bezold and Bloebaum's experiments on animals with cut vagi.

No. of Experiment	Animal	Atropin (grams)	Rate before section of vagi	Rate after section of vagi	Rate after Atropin.	
					Maximum rates	Reached in
1	Rabbit	0.005	64	20	of 52	5 min.
2	"	0.01	60	12	" 36	58 "
3	"	0.05	28	14	" 42	55 "
4	Dog	0.06	40	8	" 40	26 "

TABLE III.

Condensed records from Meuriot's experiments, showing the respiration-rate during 15-minute intervals.

No. of Experiment	Animal	Atropin (grams)	Rate before Atropin	Rate after Atropin.											
				12*	15*	20*	25*	30*	35*	40*	45*	50*	55*	60*	65*	120*
1	Dog	0.005	8		10		11			10						
2	"	0.01	10		15			14								
3	"	0.01	8	12	14		12			12						
4	"	0.05	7		15			15		4						
5	"	0.10	10			20										
6	"	0.5	10		15		16									
7	"	0.01	12		16[1]	10	8		6		6			6		
8	"	0.01	10		16[1]			10			5		6			
9	"	0.01	6[2]			10			8					6		
10	"	0.02	5[2]		10		8			8						
11	"	0.08														
12	Cat[3]	0.75	6[2]		8			7		8				6		4

* Minutes after atropin. [1] Section of the vagi after this observation. [2] Section of the vagi before atropin. [3] No respiratory records.

ments upon intact animals, the mean normal rate was 8.8 in fifteen seconds, and the mean maximum rate after giving atropin was 15.2 during the same interval, showing an increase of 73%. In three experiments in which the vagi were cut, the mean rate before atropin was 5.7 in fifteen seconds, and after atropin 9.3 during the same interval, or an increase of 63%.

Orlowski (*Beitrag Z. Kenntnis d. Einwirkung des Atropins a. d. Respiration*, Dorpat, 1891) made three experiments on *dogs*, in which the doses of atropin ranged from 0.05 to 0.3 gram, usually 0.1 or 0.2 gram repeated at about 15-minute intervals, intravenously. In none of them was there any important effect upon the respiration-rate, but a general tendency clearly in the direction of a decrease, until at least the motor disturbances became marked.

Wood and Cerna (*Journal of Physiology*, 1892. XIII, p. 881), in four experiments on dogs, recorded a rise in three and a fall in one. The rate increased from 19 to 104, 11 to 33, and 81 to 180, respectively. These marked variations cannot be explained by differences in the doses, which were 0.0017, 0.002, 0.01 and 0.002 gram per kilo, respectively, the same dose per kilo causing very different results.

The most important facts shown by the above investigations may be summarized as follows: Weir Mitchell, Keen and Morehouse, and Harley and myself found in man that the effects are uncertain. Harley observed no increase in the horse. Meuriot was the only one of all investigators who uniformly noted an increase in the rate. Bezold and Bloebaum recorded in intact animals in four out of five experiments a primary fall, which was followed by a rise to a point above the normal; and in animals with cut vagi always a rise from the first, which, however, in but a single experiment went above the rate before the section. Reichert, in intact dogs, found an increase in the rate in five experiments out of seven; while in dogs with cut vagi a marked increase was recorded in every case. Orlowski did not note any important effects, although the tendency was to a decrease. Wood and Cerna observed an increase in three experiments and a decrease in one.

The causes of these variations are numerous, but the most important are species, idiosyncracy, dose, psychic excitement and motor disturbances. It is of the utmost importance in studying the influences of these factors to know at the outstart the actions of atropin upon the respiratory center and nerves. The results of experimental research are in accord in showing: First, that atropin acts directly upon the respiratory center, primarily as an excitant, and secondarily as a depressant; second, that it depresses the afferent respiratory fibers of the vagi; third, that owing to actions upon other parts of the organism, these actions may be reinforced or antagonized, with consequent more or less important influences upon the effects produced.*

While atropin is acting as a direct excitant to the respiratory center, it at the same time is acting as a powerful depressant to the pulmonic fibers of the vagi which convey impulses to the respiratory center, which action lessens or suppresses the impulses that normally serve to excite the respiratory center, so that a paralysis of these fibers is sufficient of itself, under ordinary conditions, to reduce the respiration-rate to a very low standard. These two actions, a direct stimulation of the center and a depression of the afferent respiratory fibers of the vagi, are, therefore, antagonistic, the one tending to increase the respiratory movements, and the other to decrease them, so that the *effects* upon the respirations must be dependent, other things being equal, upon the relative intensities of the two actions. The importance of these opposing actions in determining the nature of the results will be apparent by an examination of the records of Bezold and Bloebaum, and of my own experiments upon intact animals. Rabbits were used in the experiments by the former, and dogs by the latter. The doses per kilo of body-weight and the method of injection were practically identical in both researches. Bezold and Bloebaum noted a primary fall, usually marked and more or less persistent, which was followed sooner or later by a rise to a point above the normal; but in animals in which the vagi had been cut, this primary *fall* of the rate *never* occurred. Since the fall in the rate was not observed in the latter animals, it is evident that the decrease in intact animals must be due to a depression of the afferent respiratory fibers of the vagi, the depression of these fibers being more potent in its effects as a depressant to the center than the direct coexistent simulation as an excitant. That the center is stimulated coincidently with the depression of the vagal fibers is shown in the marked and immediate rise which occurs in animals with cut vagi. Comparing Bezold and Bloebaum's re-

*Confusion may result from statements regarding actions of certain drugs because there is often a failure to distinguish between physiological actions and therapeutical actions. Physiological actions and therapeutical actions of any given drug may be alike or unlike. This statement may seem paradoxical, but it is well-founded, nevertheless. A given agent may stimulate the respiratory center and thus be physiologically a stimulant to the center, yet it may not be therapeutically a "respiratory stimulant." In the sense of the latter a "respiratory stimulant" is an agent which increases the volume of air respired, either by increasing the rate or depth, or both, of the respiratory movements. It by no means follows because the respiratory center is stimulated that the drug is a "respiratory stimulant," for the reason that the effects of such stimulant action may, for instance, be counteracted by a coincident depression of those fibers of the pneumogastric nerves which convey excitatory impulses to the respiratory center. If a drug thus coincidentally excites the respiratory center and depresses the respiratory fibers of the vagi, the physiological actions are, accordingly, direct stimulant to the respiratory center and direct depressant to the respiratory fibers of the vagi. But is it therapeutically a "respiratory stimulant"? If the respirations be increased in frequency or depth, so that the volume of air respired is increased, the drug acts as a "respiratory stimulant," but if there be a decrease, owing to the effects of depression superseding those of excitation, as above, it is a "respiratory depressant," notwithstanding that physiologically the principle is a direct stimulant to the respiratory center. In other words, the term therapeutic action is used to express the effects, and not actions.

Again, a drug may increase the force or frequency of the beats of an isolated heart, thus showing that its physiological action is that of a direct stimulant to the heart, but in an intact animal the drug may be a "cardiac depressant," because the cardio-inhibitory apparatus may be coincidently excited to so marked an extent that the direct stimulation of the heart is completely preponderated by the depressant action of the inhibitory apparatus, so that instead of having increased force or frequency of the heart beats and increased circulatory activity, there is actually the reverse. Physiologically, the drug stimulates the heart and the cardio-inhibitory apparatus; therapeutically, it is a cardiac and circulatory depressant.

Finally, curare is a decided excitant to the spinal cord, and at the same time a paralysant to the motor end-plates. This excitant action is entirely masked by the latter, and it would be about the limit of absurdity to regard curare as being therapeutically a convulsant notwithstanding the coexistence of a convulsant stimulation of the spinal cord with a state of motor quietude.

Therapeutic terms, such as "respiratory stimulant," etc., therefore express effects. Hence, to regard a drug as being therapeutically a "respiratory stimulant," merely because it stimulates the respiratory center, yet which at the same time fails to cause either an increase in the rate or in the depth of the respiratory movements, is senseless.

sults with my own, it will be noted in my experiments on intact animals, first, that the primary fall occurred in only one; second, that an increase was not invariably recorded; and third, that in animals with cut vagi, the increase was constant and very much greater than in intact dogs and rabbits. In dogs the stimulation of the center is from the first, as a rule, more than sufficient to counterbalance the decrease which tends to occur because of the depression or paralysis of the pulmonic fibers of the vagi; hence, there is rarely a decrease, but usually an increase in the rate. While, therefore, the effects of given doses differ in rabbits and dogs, these variations are not due to differences in the fundamental physiological properties of atropin, but to the variations in the relative intensities of the actions upon the respiratory center on the one hand, and upon the afferent respiratory fibers of the vagi on the other.

That the *dose*, as well as the method of administration, must have important influences, is obvious, but owing to the antagonistic actions referred to, it is impossible to predict in any case, excepting, possibly, after very large doses, what the effects will be, the same dose per kilo administered in the same way giving rise in one instance at once to a marked increase, in another to a marked decrease, in another to a primary decrease, followed by an increase, etc. The results, however, of experiments upon *dogs* lead to the following generalization; small doses (0.0005 to 0.001 gram per kilo) usually cause an increase in the respiratory-rate without there being a primary fall, but sometimes there is a decrease or no effect; very large to lethal doses (0.01 to 0.03 gram per kilo) usually cause no marked effect or a decrease. In Orlowski's experiments (*loc. cit.*), the doses were too large to reasonably expect an increase. The matter of dose is of considerable importance in connection with the indirect actions, such as psychic and motor excitement, which may decidedly affect respiratory activity; thus, while very small doses cause but trifling psychic and motor disturbances, and consequently have comparatively little effect upon the respiratory center in this way, moderate to toxic doses may cause so much excitation that their indirect effects may completely supersede the direct actions upon the respiratory center and nerves. Indeed, in a number of experiments upon animals under chloretone, chloral hydrate and other hypnotics, I have never noted, when the animals have been sufficiently under the influence of the hypnotic to prevent psychic and motor disturbances, the marked respiratory excitement occasionally observed in normal animals. In animals under hypnotics, if any marked increase occurs in the respirations, it begins upon the awakening of the animal and with the attendant psychic and muscular restlessness, and is at once set aside by a further injection of but a sufficient quantity of the hypnotic to cause psychic and motor quietude.

From the foregoing facts, taking the respiration-rate as an index of respiratory excitation, are we justified in regarding atropin as a *reliable*, *prompt*, and *powerful* respiratory excitant? That it is *not* a *reliable* and *prompt* respiratory excitant is shown conclusively by the aforesaid clinical, toxicological and experimental data; that it is *not* a *powerful* respiratory stimulant is apparent in the fact that cocain and other powerful excitants of this character, even in moderate doses, almost invariably run the rate up to from 150 to 200, or more, while such an effect by atropin is extremely rare; indeed, it is very exceptional, even in dogs, to observe a rise as high as 100 per minute. Atropin must, therefore, be classed *not* among the reliable, prompt and powerful respiratory excitants, but among those which are very unreliable and of very ordinary power.

The Effects of Atropin upon the Volume of Air Respired in Normal Animals.—Objection may reasonably be made to taking the respiration-rate as being an index of the effects upon respiratory activity; and, properly so, inasmuch as the volume of air respired is dependent upon the depth as well as upon the rate of the respiratory movements, so that the quantity of air respired may be increased without a corresponding effect upon the rate of respiration. This fact has led to studies with atropin upon the volume of air respired in both normal and morphinized animals, especially in the latter. In four experiments by Wood and Cerna (*loc. cit.*) upon normal *dogs*, in all of them the volume of air moved was increased after giving atropin, although the respiration-rate was increased in three and decreased in one. Their records show, however (one experiment excepted), that a more or less direct relationship exists between the changes in the rate and volume.

The Effects of Atropin upon the Respiration-Rate and Volume of Air Respired in Morphinized Animals.—A number of researches have been pursued to determine the effects of atropin upon morphinized animals. The results of these, like those upon the respiration-rate in dogs without morphin, while contradictory, are, in purport, unmistakably in the same direction.

Heubach (*Archiv f Exper. Path. u. Phar.*, 1878, Bd. VIII, S. 31) made two series of experiments on *dogs* with atropin and morphin. In the first, atropin was given to morphinized animals, and in the second, the morphin was given to atropinized animals. The first series includes six experiments, in four of which the respiration-rate was recorded before and after giving the atropin. The weight of the animals, doses, etc., are included in Table IV., from which it will be noted that the atropin was

TABLE IV.

Condensed records from Heubach's experiments on morphinized dogs.

No. of Experiment	Animal	Weight (Kilos)	Morphin (grams)	Atropin (grams)	Respirat'n Rate		Relative doses of Morphin and Atropin.		
					Before Atropin	After Atropin	Morphin per Kilo	Atropin per Kilo	Morphin: Atropin
1	Dog	4.57	0.15	0.002	22	20			
2	"	2.84	0.075	0.001	14	20			
3	"	5.045	0.15	0.002	18—20	25	0.0422	0.00069	1 :0.016
4	"	2.58	0.15	0.001		11—16			
5	"	2.65	0.2	0.006	11	11			

without important effects: In one experiment (No. 1) there was a slight decrease; in one (No. 6), no effect; and in two (Nos. 2 and 3), an increase of no importance. Indeed, the only experiment in which a very marked increase was noted was one of the *second series*, in which the morphin was given to an *atropinized* dog, and in which about two hours after the morphin was given a rate of 100 was recorded.

Lenhartz (*Archiv f. Exper. Path. u. Phar.*, 1886,

B. XXII., S. 337), in six experiments on morphinized dogs recorded after giving atropin a marked increase in two after the onset of convulsions. In four there was not an increase. In another series on morphinized dogs, in which atrophin was *not* given, in six of seven experiments the rate was increased after the injection of the morphin. In three it reached 140, and in one 132, showing that the morphin was a more powerful respiratory stimulant in normal dogs than atropin in morphinized dogs, and at the same time indicating that atropin may actually hinder or prevent an increase in the respiration-rate by morphin in normal dogs. There is adequate evidence in support of this view, both in the records of others and in my own experience.

Orlowski (*loc. cit.*), in his second series of experiments with atropin, studied the effects on both the respiration-rate and the volume of air respired in morphinized dogs before and after atropin. This series includes ten experiments. In the first seven, doses of 0.1 gram. of atropin were repeatedly intravenously injected, usually at fifteen-minute intervals, but towards the end of some of the experiments the doses were increased to 0.2 or 0.3 gram. In three experiments (Nos. 8, 9 and 10), the doses in the early part were 0.01 gram, similarly repeated. In these experiments atropin was injected so freely that more or less marked motor disturbances occurred, even within an hour after the first injection, and sooner or later passed into convulsions. It is obvious, therefore, that the effects of atropin upon the respirations can be studied to advantage only during the period of the least or of no motor excitement, yet sufficiently long after giving the atropin to obtain a full action of the drug upon the respiratory center and nerves; in other words, during the hour or the hour and a quarter after the first injection. In Table V will

TABLE V.

Collated from the records of Orlowski's experiments upon morphinized dogs up to the time of the sixth injection of atropin.

No. of Experiment	Animal	Weight (Kilos)	Morphin (grams)	Atropin (grams)	Respiratory Rate and Volume. Bef. Atropin Rate per min.	Bef. Atropin Vol. c. c.	Aft. Atropin Mean Rate p. min	Aft. Atropin Mean Vol. c. c.	Relative doses of Morphin: and Atropin, Morphin per Kilo	Atropin per Kilo	Morphin: Atropin
1	Dog	6.00	0.05	0.5	18	1361	18	1258			
2	"	8.56	0.075	0.5	10	1480	11.6	1776			
3	"	8.50	0.05	0.5	28	1278	28.4	1178			
4	"	8.56	0.05	0.5	11	1348	12.7	1298	6.0076	0.045	1 : 6
5	"	8.35	0.05	0.5	8	1006	6	993			
6	"	16.58	0.10	0.5	12	2708	11	2326			
7	"	4.98	0.05	0.5	15.5	946	16	964			
8	"	6.08	0.05	0.05	8	1008	12.2	1107			
9	"	5.00	0.04	0.05	17	1213	15	998			
10	"	7.75	0.1	0.05	20	1416	18.6	1358			

be found important data obtained from Orlowski's records up to the end of the first hour and a quarter. These results show clearly that atropin failed to increase the rate and the volume of air respired. The mean respiration-rate per minute before atropin was 15.7, and after atropin 14.9; the mean volume of air respired before atropin was 1369 c.c., and after atropin 1324 c.c. Orlowski's experiments show that atropin rather *decreases both the respiration-rate and the volume of air respired.* Unverricht's investigations (*Berlin Klin. Wochenschrift*, Bd. 33, 1896, S. 533, 561), experimental and clinical, are supplementary to Orlowski's, and the results are of the same purport.

Binz (*Berlin Med. Wochenschrift*, 1887, Bd. 13. S. 21), in five experiments on morphinized rabbits records in every one an increase in the volume of air respired after giving atropin. In no case, however, did the rise of volume equal the normal. The probable cause or causes of this increase will be referred to later. The figures in Table VI exhibit the doses, chief effects, etc.

TABLE VI.

Condensed records from Binz's experiments on morphinized rabbits.

No. of Experiment	Animal	Weight (Kilos)	Morphin (grams)	Atropin (grams)	Respiratory Vol. (c. c.) Before Morphin	Before Atropin	After Atropin	Relativv doses of Morphin and Atropin Morphin per Kilo	Atropin per Kilo	Morphin: Atropin
1	Rabbit	1.85	0.02	0.04	?	101	202			
2	"	2.15	0.08	0.08	188	69	111			
3	"	1.95	0.04	0.04	382	102	377	0.0181	0.0266	1 : 1.5
4	"	1.55	0.04	0.06	172	55	77			
5	"	1.90	0.04	0.08	330	218	218			

Vollmer (*Archiv. Exper. Path. und Phar.*, 1892, Bd. XXX, S. 385) made thirteen experiments on morphinized animals, two being on *rabbits* and eleven on *dogs*, in which the effects on the volume of air respired were recorded. The morphin and atropin were mostly injected subcutaneously. In one (No. 2) the atropin was given before the morphin; in two the atropin was injected into the peripheral end of the cartoid artery; and in one some morphin was given in the afternoon previous to the morning of the experiment. Eliminating these four experiments, the doses, the other conditions and the chief results of the remaining nine experiments are closely in accord and furnish good data for study and comparison. The most important statistics are collated in Table VII.

TABLE VII.

Condensed records of nine of Vollmer's experiments on morphinized animals.

No. of Experiment	Animal	Weight (Kilos)	Morphin (grams)	Atropin (grams)	Respiratory Volume (c. c.) Before Atropin	Maximum After Atropin	Relative doses of Morphin and Atropin Morphin per Kilo	Atropin per Kilo	Morphin: Atropin
1	Rabbit	1.62	0.08	0.04	870	750			
2	Dog	4.55	0.06	0.008	4040	4840			
3	"	4.56	0.06	0.001	3880	5180			
4	"	2.6	0.08	0.009	2270	3250			
5	"	4.5	0.06	0.008	4240	9900	0.014	0.0081	1:0,22
6	"	6.15	0.075	0.008	3290	5350			
7	"	6.25	0.09	0.016	6160	8880			
8	"	5.15	0.06	0.02	3090	4790			
9	"	3.62	0.082	0.016	3800	4200			

It will be observed from these records that in every case the volume of air moved after giving atropin was increased. The mean volume respired per minute before atropin was 3406 c.c., and after atropin, 5177 c.c., or a mean increase of about 52%. Whether or not this increase is to be attributed, even partially, to the atropin is questionable, and will be referred to later.

Wood and Cerna (*loc. cit.*) made three experiments on dogs with morphin and atropin, in two of which the morphin preceded the atropin, and in

one the reverse. In the former, both the respiration rate and volume of air respired were decreased. The doses, chief effects, etc., are exhibited in Table VIII.

TABLE VIII.

Condensed records from Wood and Cerna's experiments on morphinized dogs.

No. of Experiment	Animal	Weight (Kilos)	Morphin (grams)	Atropin (grams)	Respiratory Volume (c. c.) Before Atropin	Respiratory Volume (c. c.) Mean After Atropin	Relative doses of Morphin and Atropin: Morphin per Kilo	Atropin per Kilo	Morphin : Atropin
1	Dog	12	0.1	0.15	0.1	0.078	0.018	0.126	1:7
2	"	7	0.25	0.09	0.072	0.066			

It will be observed from the foregoing records that the results recorded by Heubach indicate that the effects of atropin upon the respiration-rate in morphinized animals are uncertain, and in any case not marked; that those by Binz and Vollmer indicate that atropin decidedly increases the volume of air respired; and that those by Lenhartz, Orlowski, Unverricht, and Wood and Cerna indicate positively that atropin does not increase the volume of air respired. The causes of these differences are few, and the chief are to be found in the variable doses of morphin and atropin, relative and absolute, and in the peculiarities in the methods of experiment. In analyzing and comparing these results, and in seeking the causes of the disagreements, it is of the utmost importance that the actions of each of the poisons in different doses be kept clearly in view. By consulting the accompanying table (Table IX) it will be observed that the doses of morphin and atropin varied within wide limits, both in relation to body-weight and to each other. In the experiments of Vollmer, Binz, and Wood and Cerna the doses of morphin were about the same (0.014 to 0.018 gram per kilo), but those of atropin varied enormously—Binz injected over 8 times the quantity per kilo used by Vollmer, and Wood and Cerna over 40 times more. Vollmer's doses of atropin were not lethal; Binz's were lethal and Wood and Cerna's many times the mean minimal lethal quantity. The first two observed an increase in respiratory activity, and the last a decrease. The cause of the increase in Vollmer's experiments is not far to seek: first, the doses of morphin are such as to almost invariably cause in the dog a marked increase in respiratory activity within one to two hours after their subcutaneous injection; second, the doses of atropin are approximately of the best size to evoke a *possible* respiratory excitation, directly and indirectly. After Vollmer injected the morphin he waited for from one to seven hours before he gave the atropin; or, in other words, until the marked depression of the respiratory activity of the second stage of morphin poisoning was or was about passing off. This appears clear from his records in so far as they permit of a study of this kind. In five experiments (Nos. 5, 6, 7, 8 and 9) in which the records afford an opportunity of determining the drift of respiratory activity, in three the volume of air was rising when the atropin was injected; and in two, while it was slightly falling, it seems probable from his figures that the limit of the fall had been almost if not reached, and that the morphin rise might set in spontaneously at any moment. When the fall has reached its limit, or when the volume of air respired is on the increase, there may suddenly occur a rapid and progressive increase in respiratory activity, and it is obvious that in such a state even so uncertain and moderate a respiratory excitant as atropin may cause an increase in the amount of air respired, and especially so when its powers in small doses as a psychic and motor excitant are borne in mind. In fact, under the peculiar conditions of the experiments, Vollmer's results are absolutely without significance in any application of the actions of atropin as an antidote in the lower animals or man under lethal doses of morphin. Likewise Binz's results may be entirely misleading, the doses of atropin being lethal and too large to cause respiratory excitation unattended by marked motor disturbances. In Wood and Cerna's experiments the doses of atropin were so enormous that no respiratory excitation could possibly be expected unless due to motor agitation.

TABLE IX.

Showing the doses of morphin and atropin per kilo, and their ratios in the various researches. The quantity in each case represents, as a rule, divided doses.

EXPERIMENTER.	orphin per Kilo. (grams)	Atropin per Kilo (grams)	Morphin : Atropin
HEUBACH	0.0422	0.00066	1:0.016
BINZ	0.0181	0.0266	1:1.5
VOLLMER	0.014	0.0061	1:0.22
ORLOWSKI	0.0076	0.045	1:6
WOOD AND CERNA	0.018	0.126	1:7

In Heubach's research the mean quantity of morphin was 0.0422 gram per kilo, or about one-ninth of the mean minimal lethal dose, while the dose of atropin was but 0.00069 gram—almost infinitesimal. His results were variable, partly because the doses of morphin were too much in excess of the atropin, and partly because of the very small dose and the variability in the actions of the atropin. Heubach used 3 times the quantity of morphin employed by Vollmer, but only one-fifth the quantity of atropin and, moreover, unlike in Vollmer's experiments, he injected the latter shortly, and not hours, after the morphin state was established.

The foregoing records, as a whole, certainly are in accord with those obtained in normal animals in support of the belief that atropin is not only not a reliable, prompt and powerful respiratory excitant, but among those which are very unreliable and of very ordinary power, and which act less frequently, as a rule, as respiratory stimulants than otherwise. Moreover, the results of Lenhartz's experiments and of my own, as well as the toxicological records of Unverricht and others, lead to the inevitable conclusion that in morphinized individuals atropin not only does not usually excite respiratory activity, but actually *lessens* it.

While thus the drift of the results of the investigations upon man and the lower animals is to prove the absolute unreliability and the lack of power of atropin as a respiratory stimulant, it must, neverthe-

less, be admitted that it has at times proved of unquestionable value in morphin poisoning by exciting respiratory activity. In exceptional cases, as already stated, it acts as a decided respiratory stimulant, yet it is questionable as to what extent its value as a morphin antidote is due to direct actions upon the respiratory center, or to indirect actions through the psychic processes, the circulation, general metabolism, etc. The psychic stimulation is, of course, a more or less potent factor in maintaining the respiratory movements, but this is of no avail in man when the second stage of morphin poisoning has been passed. The influences of the changes in the circulation and in general metabolism will be considered in turn.

(B) **The Actions of Atropin upon the Circulation of Normal and Morphinized Man and Lower Animals.** While the actions of morphin upon the circulation of man are not such as to be of themselves inimical to life, they, nevertheless, like the lowered body-temperature and the profound depression of general metabolism,* contribute to the causation of the paralysis of the respiratory center.

A study of the effects of atropin upon the circulation of morphinized animals presupposes an adequate knowledge of the actions of morphin and of atropin upon the circulation of normal animals, but unfortunately our information is far from being entirely satisfactory, especially so as regards morphin. Nevertheless, by means of such data as we possess much may be learned.

The Actions of Morphin upon the Circulation.—The most striking effects of morphin upon the pulse are observed in a decrease in the rate and an increase in the volume. The changes may be preceded or followed by those of an opposite character. In a research upon *rabbits* and *dogs*, Gscheidlen's (*Untersuch a.d.Physiolog. Lab. in Wuerzburg*, 1869, Theil II, S. 21) records indicate that while the effects are somewhat variable, the general type is well marked. Very small doses (0.003 to 0.006 gram) tend to cause a more or less marked increase in the rate followed by a fall and subsequent return to the normal, or to a point above the normal. Moderate doses tend to cause a fall from the first, which may be preceded or followed by a rise. After a lethal dose the pulse nearly always remains subnormal and full until late in the poisoning, when it may become very frequent and of little volume. These results and those of my own on *dogs* are in general accord, and in entire harmony with those observed in man.**

Upon the arterial pressure very small, or therapeutic doses, exert but little effect. A slight rise may occur, but more often there is a fall, and if the dose be given intravenously a fall may precede the rise, and this in turn be followed by a fall. After larger to fatal intravenous doses a more or less marked fall occurs, which is often preceded by a rise. After subcutaneous lethal doses I have never observed a rise of pressure at any time. (See papers of Gscheidlen (*loc. cit.*), Lenhartz (*loc. cit.*) and Guinard (*Comptes-rendus de la Societe Biologie*, 1895, p. 551).

The changes in the pulse and arterial pressure are not to any extent interdependent. The factors affecting the circulation are many and by no means co-operative. During the first stage of the poisoning the heart is directly stimulated, as shown by the results of the experiments by Gscheidlen (*loc. cit.*) and Ringer and Sainsburg (*British Medical Journal*, 1883, Vol. I, pp. 451, 556) on the isolated heart; but at the same time the cardio-inhibitory apparatus is stimulated, which tends to counteract the direct stimulation of the heart, and thus to lessen the pulse-rate, increase the pulse-volume and lower the arterial pressure. In the second stage of the poisoning this inhibitory action sooner or later completely supersedes any direct stimulation of the heart that might possibly exist. During this stage, while the direct stimulation of the heart disappears early, the stimulation of the cardio-inhibitory apparatus disappears very late, these two actions being replaced by a direct depression of the heart which may be manifested by either an infrequent and full pulse, or by a frequent and feeble pulse, both of which are associated with low arterial pressure. The changes in arterial pressure are, as previously intimated, only incidentally related to the alterations in the pulse, the reason being that morphin acts coincidentally upon the cardiac and vaso-motor mechanisms in such a way that the actions may be antagonistic or synergistic, as the case may be. Thus, while morphin at one period of the early part of the poisoning is stimulating the cardio-inhibitory apparatus, and in this way tending to lessen the pulse-rate and the work of the heart, and consequently operating to lower arterial pressure, the heart itself and the vaso-motor mechanism are being stimulated as to cause an increase of pressure. It is therefore obvious that the nature of the result at this time—a rise, or a fall, or no change in pressure—will be determined by the relative powers of these antagonistic factors. Later, both the direct cardiac and the vaso-motor stimulation pass off, leaving the cardio-inhibitory stimulation unopposed, hence a fall of pressure, which also may be contributed to by lessened vaso-motor activity. When the third stage of the poisoning in man is reached the direct stimulation of the heart, the stimulation of the cardio-inhibitory apparatus and the stimulation of the vaso-motor apparatus have given way entirely to depression of all three, so that the actions upon the cardiac and vaso-motor mechanisms are now synergistic, and the depression of the heart may be manifested either in an infrequent and full pulse, or a rapid and feeble pulse, accompanied by low arterial pressure.

*For further information, see article by the author in the issue of the Philadelphia Medical Journal of March 9.

**The effects upon the pulse, arterial pressure and respiratory movements are apt to be more variable when the injections are given intravenously than when subcutaneously, owing to the variations in the degree of concentration in which the poison reaches the circulation. The effects not only vary with the absolute quantity of the morphin, but with the strength of the solutions and with the rapidity with which the injecting is done. I have frequently seen injections made intravenously in a manner to indicate that they were being forced into a cistern instead of into highly sensitive structures. A dose of 0.1 gram of morphin injected intravenously gives rise to results in certain respects very different from what are caused when the injection is subcutaneous, and the results will be modified if injection intravenously be practised slowly or rapidly, etc. In fact, one can, if inexperienced or so disposed, juggle with results in this way quite as effectually as with words and figures.

The Actions of Atropin upon the Circulation of Normal Animals.—The actions of atropin upon the circulation of man and the lower animals are even more complex and the effects decidedly more uncertain than those of morphin. In an article on atropin (*University Medical Magazine*, 1891, Vol. III, p. 207) attention was called to the very uncertain results, both in man and in the lower animals, following the administration of atropin. Notice was here directed to the clinical observations of Mitchell, Morehouse and Keen (*loc. cit.*) who recorded that in one-third of their cases the pulse fell within four to ten minutes after the subcutaneous injection of from a fiftieth to a thirtieth of a grain, and remained *subnormal*, the minimal being reached at the tenth or the eleventh hour. In the other two-thirds it was unaffected at first, then rose rapidly after the seventh or eighth minute, reaching a maximum generally within an hour. Putnam (*New York Medical Journal*, 1873, Vol. XVII, p. 249) in three cases recorded that in one the pulse fell to 80 and remained so for an hour; in another, it fell from 86 to 68, then rose above the normal; and in another, fell from 92 to 80 and followed by rise above the normal in ten minutes. The results of the experiments upon the lower animals show clearly that the same dose under apparently the same conditions may cause entirely different effects. Those recorded by Meuriot in his thesis (*loc. cit.*) are quite uniform, an increase being observed in every one; but in the more detailed studies by Bezold and Bloebaum (*loc. cit.*) and by myself (*loc. cit.*) the results show positively that it is impossible to predict after any given dose how the pulse-rate will be affected. As a rule, however, small doses are apt to be followed by an increase, and large doses by a decrease. These variations are owing to the complexity of the actions upon the cardiac mechanism, the most important of which being a conjoint depression of the cardio-inhibitory apparatus and a transient direct excitation followed by a direct depression of the heart, the former tending to increase the pulse-rate and the latter to first increase and then lessen it, so that whether there is an increase or a decrease, or no effect will depend upon the relations of these factors. The pulse-rate after toxic doses falls because of cardic failure.

The effects upon the arterial pressure are also uncertain, but the same rule holds good, that is, small doses tend to increase and large doses to decrease it. There is, however, no constant relationship between the changes in the pulse and the changes in the pressure, although the factors operating to increase the pulse-rate tend to co-operate with a stimulation of the vaso-motor mechanism to increase arterial pressure. The direct stimulation of the heart, the depression of the cardio-inhibitory apparatus and the transient stimulation of the vaso-motor mechanism unite to increase pressure; while the depression of the vaso-motor mechanism, which sets in very early, sooner or later offsets the cardic actions and causes a fall of pressure—indeed, this vaso-motor depression may occur so early that the pressure falls from the first, notwithstanding that there may co-exist an increase of the pulse-rate. In experiments upon dogs I have often seen the pulse-rate increased and the arterial pressure decreased at the same time. In fact, every kind of variation in their relations, qualitively and quantitively, may be noted. In clinical work, the character of the pulse, as determined by the fingers, is commonly taken as an index of circulatory stimulation or depression, but from the foregoing it is evident that the frequent pulse so often observed after giving atropin cannot be regarded as meaning that the work of the heart and arterial pressure are increased; in other words, that under such conditions atropin is either a "cardiac" or a "circulatory stimulant."

The Actions of Atropin upon the Circulation of Morphinized Animals.—Having shown in a preceding section the erroneousness of the belief that atropin is a reliable, prompt and powerful respiratory stimulant in morphin poisoning, yet recognizing that in exceptional cases it has done good by stimulating the respiratory center, may it not be that when the respirations are thus improved the result is due in part at least to circulatory stimulation, and that even in cases in which the respiratory movements have not been favorably affected good has nevertheless in this way been accomplished? Atropin in its actions upon the circulatory mechanism is in some respects a synergist to morphin, and in others an antagonist; but it is a synergist only when given in small to moderate doses, and only under certain conditions. In large to lethal doses their actions are toxicologically essentially the same, morphin being, however, the more powerful in the depressant actions upon the respiratory, cardiac and vaso-motor mechanisms. In the earliest period of morphin poisoning, morphin stimulates the heart directly and *stimulates* the cardio-inhibitory apparatus. If a small dose of atropin be given it also directly stimulates the heart, but *depresses* the cardio-inhibitory apparatus. Hence, atropin should, theoretically, increase the pulse-rate if the direct stimulation of the heart and the depression of the cardio-inhibitory apparatus, which are co-operative, are sufficiently powerful in their combined actions to neutralize the stimulation by the morphin of the cardio-inhibitory apparatus. At the same time both morphin and atropin tend to stimulate the vaso-motor mechanism, and in this way to increase arterial pressure. Therefore, the increase of pressure may be both cardiac and vaso-motor. When the second stage of morphin poisoning is fully developed, the direct stimulant action of the morphin upon the heart becomes anulled, and the pulse is less frequent but full owing to the excitation of the cardio-inhibitory apparatus; while at the same time the arterial pressure is lowered, due partially to the cardic-inhibition, and in part to a depression of the vaso-motor mechanism. If now a small dose of atropin be given, it should in a typical case counteract the actions of the morphin upon both the pulse and the arterial pressure, and both should be increased. That both statement and reasoning are correct have ample confirmation in the studies of Harley (*loc.*

cit.), Heubach (*loc. cit.*), Lenhartz (*loc. cit.*) and myself on morphinized animals. In the accompanying table (Table X) will be found condensed

TABLE X.

Condensed records from Heubach's experiments with atropin on morphinized dogs.

No. of Experiment	Animal	Weight (Kilos)	Morphin (grams)	Atropin (grams)	Pulse-Rate per min.		Arterial Pressure m. m.	
					Before Atropin	After Atropin	Before Atropin	After Atropin
1	Dog	4.57	0.15	0.002	44	180	60- 80	1-40
2	"	2.34	0.075	0.001	52	200	110-115	135-140
3	"	5.045	0.15	0.002	60	200	60- 80	120-125
4	"	2.58	0.15	0.001	40	200	60- 80	160-170
5	"	8.51	0.2	0.001	24	184	80-100	175-180

records from Heubach's experiments on morphinized dogs in which the doses of morphin were sufficient to cause a marked second stage; and it will be observed that in every experiment there occurred a decided increase in both the pulse and pressure. In Lenhartz's experiments the doses of morphin were very much larger, but the antagonistic effects were marked in both respects. When the third stage is developed, and the lowered blood-pressure is due to a combined direct cardiac and vaso-motor depression, no decided augmentation of the circulation is caused by small doses of atropin, because its stimulant actions are too feeble to overcome the morphin depression; while large doses which depress both heart and vaso-motor system, not only do not do good but intensify the morphin state and hasten the fatal issue. This has been my experience invariably in experiments upon morphinized dogs, and the records of cases of morphin and opium poisoning in man in support of this are not rare.

It will be observed that atropin in small to moderate doses is, broadly speaking, an antagonist to the actions of morphin upon the circulation during only the first and second stages of the poisoning; and that during the third stage small doses are useless, while moderate to large doses are absolutely harmful. While, therefore, atropin in any given case may be of little or no good as a direct respiratory stimulant, it is obvious that its actions in small to moderate doses upon the circulation may be of value by strengthening the activities of the structures in general, especially so of the cerebro-spinal centers.

It yet remains to determine to what extent, if any, atropin directly or indirectly antagonizes the marked decrease of temperature and the profound depression of general metabolism caused by morphin.

(C) **The Actions of Atropin on Body-Temperature and General Metabolism in Normal and Morphinized Animals.**—In morphin poisoning, as shown in a previous article (*Philadelphia Medical Journal*, March 9, 1901), the very marked depression of body-temperature and general metabolism were fully set forth. It is, therefore, of the utmost importance toxicologically to know if atropin in small to moderate doses is capable of successfully antagonizing these extremely dangerous actions, which probably contribute as much to the lethal end as the direct action of the poison upon the respiratory center.

The records of the effects of atropin upon body-temperature are somewhat at variance, but the differences are readily harmonized. In *man*, Meuriot (*loc. cit.*) noted after therapeutic doses a rise of from 0.5° to 1.1° (C.?); Eulenberg (quoted by Meuriot), a rise of from 0.5° to 0.8°; and Harley (*loc. cit.*, p. 204), a slight rise of surface temperature, rarely exceeding 1° (F.?), and a slighter rise internally. In *cats*, Ott and Collmar (*Therapeutic Gazette*, 1887, Vol. III, 3d Series, p. 511) also recorded a rise. In *dogs*, Meuriot found after non-toxic doses a rise of from 1° to 3°, and after a lethal dose a fall of 5.1°; Dumeril, Demarquay and Lecointe (quoted by Meuriot), a rise of 4° after a small dose, and a fall of 3° after a large dose. Schroff, Frolich and Lichtenfels (quoted by Meuriot) observed a decrease of 0.1° to 0.6° in *man*. In a large number of calorimetrical experiments upon *dogs* I have rarely noticed a rise unless the dose was so large as to cause marked tremors or other motor disturbances; but, to the contrary, there usually occurred a more or less marked fall. The only calorimetrical experiments on record are those of Ott and Collmar (*loc. cit.*), who found that heat production in the cat was increased, and that the rise of temperature was due to this cause. In my experiments upon dogs the effect upon heat production, and consequently upon general metabolism, was always to reduce it, unless motor disturbances were present, when there was a rise of both temperature and heat production.

Upon theoretical grounds it is reasonable to suppose that atropin in man increases the body-temperature during the first stage; decreases it during the second stage; and decreases or increases it during the third stage, according as this stage is one of paralysis or one of convulsions. The depression or suppression of the secretion of sweat is undoubtedly the most important factor in man in causing the rise during the first stage, while the marked psychic and general depression are sufficient to explain the fall in the second stage and also in the third stage if the latter be one of depression. If the third stage be one of motor excitement, the temperature may rise, for obvious reasons, and even hyperpyrexia may be present. No increase of temperature, except rarely, has been observed by me in the dog during the first stage, owing doubtless to the absence of sweat glands in these animals. Nor have I noted hyper-normal temperature at any time unless there was psychic or motor excitement. It is not unlikely that in the cat, and in certain other species, a rise of temperature may be as constant a phenomenon as it is after morphin, and for the same reasons. Indeed, it is more than probable, owing to the dual groups of opposite actions of atropin, that instances may occur in man and in the dog in which a rise of temperature and of heat production (general metabolism) may not only occur during the first and third stages, but be present throughout the whole course of the poisoning. In the accompanying table (Table X) will be found the con-

TABLE XI.

Condensed records of six experiments with atropin on normal dogs. The units of heat are in kilogram-degrees, and of temperature in the Centigrade scale.

EXPERIMENT 1. Dog: Weight, 8.72 Kilos. Dose, 0.0005 gram per kilo.	Hourly Heat Production	Hourly Heat Dissipation.	Rectal Temperature. Beginning of hour.	Rectal Temperature. Ending of hour	Rectal Temperature. Gain or loss + or—	Mean Room Temperature
Hour before Atropin	22.892	24.775	38.58	38.31	— 0.27	22.2
First hour after "	20.754	23.475	38.31	37.92	— 0.39	22.2
Second " " "	21.270	19.875	37.92	38.12	+ 0.20	22.2
Third " " "	20.191	20.400	38.12	38.09	— 0.08	22.7
Fourth " " "	18.498	19.400	38.09	38.22	+ 0.13	23.7

EXPERIMENT 2. Dog: Weight, 6.575 Kilos.

Dose, 0.001 gram per Kilo.

Hour before Atropin	15.134	16.975	38.83	38.48	— 0.35	22.2
First hour after "	16.000	16.000	38.48	38.48	+—0.00	22.8
Second " " "	13.231	13.800	38.48	38.24	— 0.25	23.6
Third " " "	14.497	13.550	38.24	38.42	+ 0.18	23.8
Fourth " " "	15.891	14.550	38.42	38.58	+ 0.16	22.8
Fifth " " "	15.497	15.700	38.58	38.53	— 0.05	22.7

EXPERIMENT 3. Dog: Weight, 20.688 Kilos.

Dose, 0.0025 gram per Kilo.

Hour before Atropin	62.652	50.200	38.18	38.86	+ 0.68	22.4
First hour after "	51.159	50.775	38.86	38.34	— 0.52	21.8
Second " " "	35.682	47.875	38.34	38.68	— 0.66	21.1
Third " " "	40.495	38.675	37.68	37.79	+ 0.11	22.8
Fourth " " "	39.186	40.675	37.79	37.70	— 0.09	21.5
Fifth " " "	38.827	36.675	37.70	37.83	+ 0.13	21.0

EXPERIMENT 4. Dog: Weight, 18.366 Kilos.

Dose, 0.005 gram per Kilo.

Hour before Atropin	58.392	54.425	39.12	39.39	+ 0.27	20.7
First hour after "	50.462	61.775	39.39	38.62	— 0.77	21.9
Second " " "	58.425	58.425	38.62	38.62	+—0.00	22.5
Third " " "	52.008	54.675	38.62	38.48	— 0.14	21.7
Fourth " " "	37.206	38.675	38.48	38.38	— 0.10	21.8
Fifth " " "	43.908	41.025	38.38	38.58	+ 0.20	21.9

EXPERIMENT 5. Dog: Weight, 9.627 Kilos.

Dose, 0.005 gram per Kilo.

Hour before Atropin	23.637	24.300	38.24	38.05	— 0.19	17.7
First hour after "	21.540	26.700	38.05	37.38	— 0.67	19.0
Second " " "	28.762	25.425	37.38	37.19	— 0.19	19.6
Third " " "	23.665	23.050	37.19	37.14	— 0.05	20.7
Fourth " " "	22.246	23.400	37.14	37.34	+ 0.20	20.9
Fifth " " "	21.263	20.875	37.34	37.39	+ 0.05	22.1

EXPERIMENT 6.—Dog: Weight, 13.265 Kilos.

Dose, 0.005 gram per Kilo.

Hour before Atropin	34.700	34.700	38.79	38.79	+—0.00	21.6
First hour after "	33.574	33.600	38.79	38.78	— 0.02	21.6
Second " " "	26.972	34.825	38.98	38.24	— 0.74	22.3
Third " " "	28.615	30.950	38.24	38.02	— 0.22	23.0
Fourth " " "	21.678	24.125	38.02	37.79	— 0.23	23.7
Fifth " " "	24.841	22.295	37.79	37.98	+ 0.19	23.9

densed records of six experiments performed on normal dogs in which atropin was given *subcutaneously* in doses varying from 0.0005 to 0.005 gram per kilo of body-weight. In each the animals were studied for one hour before the atropin and for four to five hours after. The effects upon body-temperature and heat production (general metabolism), and the cause of the temperature changes, will be easier understood if averages be obtained of heat production, heat dissipation and body-temperature during each hour, and the results be expressed in the form of a chart (Chart 1), thus giving a composite

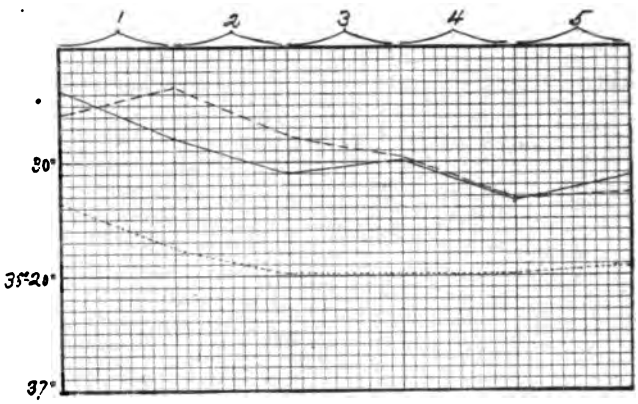

Chart 1. The curve of heat production (general metabolism) is represented by an unbroken line (——); the curve of heat dissipation by a broken line (— — — —); the curve of rectal temperature by a dotted line (.....).

picture of the whole, or of the type of action. After giving atropin, the curve of heat production shows that general metabolism falls decidedly and regularly during the first two hours, recovers a little during the third hour, falls during the fourth hour, and rises somewhat during the fifth hour. During the whole five hours it remains subnormal. The mean maximum decrease during the five hours was over 20%. Heat dissipation was slightly increased during the first hour, then fell steadily until the end of the fourth hour, and then slightly recovered. The body-temperature fell steadily during the first four hours (very rapidly relatively during the first and second hours, and but little during the third and fourth), and then rose slightly. The maximum fall of temperature was about 0.7° C. From these records it is clear that the curves of heat production and body-temperature are closely related, and that the fall of temperature is due to lessened general metabolism, which is aided during the first hour by a slight increase in heat dissipation.

In three morphinized dogs, to each of which 0.01 gram of morphin per kilo of body-weight was injected subcutaneously, and in which the doses of atropin per kilo were 0.001, 0.005 and 0.01 gram, respectively, and also injected subcutaneously, the atropin not only did not favorably influence the depressant action of the morphin upon general metabolism, but intensified it. In these experiments (Table XII) the dogs were studied for two hours

TABLE XI.

Condensed records of three experiments with atropin on morphinized dogs. Each of the dogs received 0.01 gram of morphin sulphate per kilo subcutaneously.

EXPERIMENT 1. Dog; Weight, 13.25 Kilos. Dose, 0.001 gram of atropin sulphate per Kilo.	Hourly Heat Production	Hourly Heat Dissipation	Rectal Temperature. Beginning of hour	Rectal Temperature. Ending of hour	Rectal Temperature. Gain or loss + or —	Mean Room Temperature
First hour before Morphin	26.088	27.204	38.88	38.77	— 0.11	23.4
Second " " "	25.287	25.404	38.77	38.76	— 0.01	23.5
Hour after "	21.086	25.004	38.76	38.48	— 0.28	23.4
First " " Atropin	9.824	22.044	38.48	37.28	— 1.20	23.0
Second " " "	24.016	21.896	37.28	37.48	+ 0.20	23.6
Third " " "	23.674	20.070	37.48	37.82	+ 0.34	23.9

TABLE XII (Continued).

EXPERIMENT 2.—Dog: Weight, 12.74 Kilos.
Dose, 0.005 gram of atropin sulphate per Kilo

First hour before	Morphin	25.516	28.064	40.01	39.76	— 0.25	25.5
Second " "	"	28.982	26.580	39.76	39.51	— 0.25	24.6
Hour after	"	20.851	26.568	39.51	38.90	— 0.61	24.6
First " "	Atropin	12.078	15.840	38.90	38.58	— 0.37	24.5
Second " "	"	16.231	16.740	38.58	38.48	— 0.05	24.7
Third " "	"	9.214	11.864	38.48	38.22	— 0.26	24.7

EXPERIMENT 3.—Dog: Weight, 12.97 Kilos.
Dose, 0.01 gram of atropin sulphate per Kilo.

First hour before	Morphin	25.827	33.090	39.42	38.72	— 0.70	24.5
Second " "	"	28.045	28.450	38.72	38.68	— 0.04	24.6
Hour after	"	20.088	27.276	38.68	37.83	— 0.75	24.6
First " "	Atropin	11.581	20.654	37.83	36.97	— 0.86	24.4
Second " "	"	10.678	18.560	36.97	36.21	— 0.76	23.0
Third " "	"	15.109	15.528	36.21	36.18	— 0.03	23.6

before morphin, for one hour after morphin, and for three hours after atropin. The maximum fall of temperature in one after giving both morphin and atropin was 1.48°, in another 1.2°, and in another 2.4°; the mean of the three being 1.69°. The maximum decreases of heat production were, respectively, 63.1, 60.5 and 59.9%, or a mean of 61.5%. In morphinized dogs without atropin (*loc. cit.*) the mean fall of temperature was 1.93°, and the mean fall of heat production 41.7%, showing that atropin somewhat hinders the fall of temperature caused by morphin, but increases the fall of heat production. The lessening of the fall of temperature by atropin is owing, as is shown by the calorimetric records, to its partially counteracting the actions of the morphin upon heat dissipation.

These uniform results show clearly that in morphinized dogs atropin not only does not lessen but intensifies the depression of general metabolism, yet somewhat hinders the fall of temperature caused by the morphin. Doubtless were atropin given in sufficient doses to cause tremors or other forms of motor excitement, the effects caused in both normal and morphinized dogs might be very much modified, and even reversed; but the doses required to accomplish this would have to be far beyond what are within therapeutic limits, and so large as to cause evil in other directions.

III.—Is Atropin Valuable or Dangerous in Morphin Poisoning?

It must be obvious from the foregoing study that if atropin is of value in morphin poisoning its limitations are well marked, and that beyond these confines it may not only be valueless but dangerous and even fatal. The belief that morphin and atropin are to a wide extent antagonistic was founded upon a most superficial knowledge of their physiological properties. That they are in certain important respects synergistic is beyond question: Both are narcotics; both behave like double poisons, one acting as a general excitant and the other as a general depressant; both cause co-existent states of excitation and depression; both cause in man a primary stage of psychic excitation, a secondary stage of psychic and physical depression, both primarily excite and secondarily depress the respiratory center, the heart, the cardio-inhibitory apparatus, and the vasomotor mechanism; both primarily increase and secondarily decrease the arterial pressure, the pulse-rate, and probably secretory activity in general; both markedly lessen general metabolic activity and lower body-temperature when given in moderate to large doses; both are delirefacients, hypnotics, paralysants and convulsants; both cause severe motor depression which is particularly marked in the hind legs; both depress the sensory and motor nerves; both in small doses lessen and in toxic doses excite peristalsis; both cause death almost invariably by a paralysis of the respiratory center. This parallelism might be carried still further and to details were it necessary, but what has been stated is sufficient to show striking similarities in their physiological properties, and to convince even the most biased and skeptical that, as a whole, morphin and atropin are synergists rather than antagonists—whether one or the other depends, other things being equal, upon the dose and the stage of poisoning in which one or the other is given.

There can be no doubt that atropin may be of value as an antidote in morphin poisoning, but only before the third stage, and then only when given in small or moderate doses. But even here its usefulness is practically limited to a possible excitation of the respiratory movements and a stimulation of the circulation; both of which, however, may be fully compensated for in its pernicious effects, chiefly upon general metabolism. Given in large doses during the second stage, or in moderate to large doses during the third stage, it almost, if not without exception, does harm by intensifying the morphin condition, prolonging or shortening, but intensifying the second stage, or shortening the third stage and hastening the fatal issue. If the second stage is shortened, it is owing to the earlier development of the third stage of the poisoning. This I have found to be a uniform result of a large number of experiments upon dogs, and which is fully supported by the records of other investigators. In fact, a dose of morphin that is not lethal may be made so by the synergistic actions of a sublethal dose of atropin. The results of a series of experiments made by me on 12 dogs in a study of this point are positive proof of this statement. These animals were divided into three lots: To three were given *subcutaneous* doses of morphin equal in each to two-thirds of the mean minimal lethal quantity; to three were given *subcutaneous* doses of atropin equal in each to one-third of the mean minimal lethal quantity; and to six were given both morphin and atropin in doses as above. Everyone of the morphin dogs recovered; every one of the atropin dogs recovered; but every one of the dogs which received both morphin and atropin died. Indeed, when atropin is given in large doses during any stage of morphin poisoning, not merely is atropin poisoning introduced, but a form of poisoning practically identical with that which preexisted; hence, under such conditions the atropin is not only not antidotal but equivalent to a dose of morphin; and inasmuch as atropin is the more powerful poison, the quantity given is equal to a larger quantity of morphin, the ratio depending upon peculiarities of species and individuals. These results have confirmation in Harley's researches, who found, for instance, that in the dog the hypnosis of morphin was

converted into narcosis by atropin; and that in man the hypnotic effect of morphin was prolonged by atropin. Moreover, as a result of careful studies of cases of poisoning in man, he concludes that belladonna has not only no influence whatever in accelerating the recovery from opium, but that in large doses its actions are exactly the reverse to being an antidote. This statement is also supported by the histories of cases referred to by Unverricht (*loc. cit.* and Lenhartz (*loc. cit.*)

A large number of cases of opium and morphin poisoning might be quoted in which atropin or belladonna was used, and in which the respiratory, circulatory and other symptoms went from bad to worse after giving the "antidote;" but this, perhaps, would be futile because it would doubtless be claimed that the aggravation of the symptoms after the atropin was not due to the atropin, but merely the natural development of the course of events of morphin poisoning, and that the atropin or belladonna failed to act because the quantity of morphin or opium was overwhelming. There is, however, another way of reaching this problem, which is to collect the statistics of a large number of cases of morphin and opium poisoning, and divide the cases into two groups, one including those treated with atropin or belladonna, and the other those without such treatment. If atropin or belladonna be of benefit, the first group should show the lower percentage of deaths; if not, the reverse. Lenhartz (*loc. cit.*, S. 338) made such a study of 132 cases, and found that the death-rate in the cases treated by belladonna preparations was 38%, while in those not so treated it was only 15%. From this one is lead to infer that about two-thirds of the deaths from morphin and opium poisoning treated by atropin or belladonna were due to the antidote!

Treatment of Nervous Diseases in the Family.—R. Gnauk (*Berliner Klinische Wochenschrift*, November 26, 1900, No. 48) discusses the distinctions that are to be drawn in the treatment of nervous diseases in the family and outside of the same. The author believes that in cases in which there are no demonstrable causes, the term "functional" should be avoided. Function is affected in all nervous disorders, and therefore the term functional is not a proper one for purposes of differentiation. There exists between health and nervous diseases the somewhat indefinite conception of nervousness. Individuals are frequently seen who show objective signs of nervous disorders like the so-called hysterical stigmata, but who feel healthy and are not incapacitated. The treatment of nervousness is doubtlessly no less important than the treatment of the diseases which may result in consequence of neglecting this condition. The author believes that there are cases which are especially adapted for home treatment, among these being patients who have remained too long in an institution and have accustomed themselves to this form of existence. In these cases, while the disease may have been somewhat checked, the improvement nevertheless did not continue above a certain level, since the pathological condition, as it were, accommodated itself to the conditions and environments of the institution. Furthermore, there are individuals who possess an unconquerable antipathy towards institutions. To this category also belong cases of nostalgia. In no form of disease is uninterrupted contact with the physician of such importance as in nervous disorders. The attention that the physician pays to the treatment of symptoms if often fruitful of astonishing results. This is particularly the case in treating individual organs like the stomach, pelvic organs as well as internasal conditions. Remedies will frequently have to be employed which in other individuals with the same symptoms would not be necessary. [M. R. D.]

THE TREATMENT OF DISEASE BY LOCAL APPLICATION OF SUPERHEATED DRY AIR.*

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Lewis A. Tallerman, of England, in 1893 (see note below), introduced the use of superheated dry air as a remedy to alleviate pain and cure disease. A number of cases were treated at St. Bartholomew's Hospital with success, and soon the method was in vogue at the other large London institutions. On November 11, 1896, Tallerman read a paper on hot air at a meeting of the Philadelphia County Medical Society, and treated a case of lumbago and a case of gout successfully before the members. On December 4, 1896, Virgil Gibney demonstrated its effectiveness in New York City at a meeting of the Practitioner's Society. The first comprehensive monograph on the subject was the "Tallerman Treatment by Superheated Dry Air," by Arthur Shadwell, London, 1898, although previous to that time a number of articles had appeared relating beneficial effects in cases suffering from different diseases. This form of treatment is by no means so widely known as it deserves to be, and it is the object of this paper to call renewed attention to it, and to give the results obtained by the writer with synopses of cases reported by other observers.

Many forms of apparatus have been devised, the essential components of each being an oven to enclose the affected part, a suitable covering for the skin to absorb perspiration and prevent blistering, and some means of generating heat. The writer has used the Kelly apparatus, which has a flexible aluminum half-cylinder with projecting flaps to act as an oven, and a small stove beneath in which an alcohol lamp or a Bunsen burner may be placed. Some writers advise against alcohol as a heating agent, as it generates water and the air does not remain perfectly dry. Blair has invented a complicated apparatus by which the oven is divided into two parts, the inner for the limb, and an outer from which the products of combustion escape through a valve. Electricity has found favor in England, the heat being easily regulated as in the Luff or Dowsing apparatus. Probably the Sprague apparatus is the most complete, but it is so expensive and heavy as to be adapted for use only in institutions. The Kelly apparatus, although deficient in many ways, is cheap and can be readily carried to a patient's house.

The part to be treated is covered by three to four layers of gauze or flannel, or even a Turkish towel, and in general it is found that better results are obtained if this covering is not too thick, but only thick enough to absorb perspiration and prevent the heat from burning the patient. The treatments are given once a day or three times a week.

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*Kirby and O'Malley (Ther. Gaz., Nov. 15, 1897) state that a Mr. Urquhart invented this method of "thermotherapeia," and they also say it had been in use only two years. No references to the literature are given. In the bibliography at the end of this paper one may find numerous statements tending to contradict their views.

**Read at a meeting of the Medical Section of the Buffalo Academy of Medicine, December 11, 1900.

They last from one-half to one hour, and the temperature reached in the bath varies from 250° to 340° F., the heat varied according to the sensations of the patient. Massage to the affected part is indicated afterwards as a rule, especially if there is any swelling or exudation.

The effects of this extreme heat locally are: a relaxation of the tissues, an increase in the circulation with dilatation of the blood-vessels, a numbing of the sensory nerves, a marked perspiration, and often a change from an unhealthy to a healthy metabolism. Tenderness and swelling are diminished, pain is relieved, and stiffened joints and muscles move more freely. Sometimes adhesions in a joint or around a tendon may be broken more readily after a few treatments, and a flat foot may be overcorrected and put into a plaster dressing with greater ease.

General effects are in evidence: The temperature of the body is raised from ½° to 2° F. with a rapid drop to normal after the bath. The pulse is moderately quickened, general perspiration is increased, and the kidneys secrete more actively. Chrètien, of Paris, found that in a case of long standing gout the daily elimination of uric acid by the kidneys was markedly increased after nine treatments with hot air. It is a remarkable fact that often the benefit derived from the treatment is not limited to the part exposed to the heat, but another part of the body similarly affected participates in the improvement. For example, Walsh reports a case of chronic eczema of both hands, in which the right only was treated, but the skin disease disappeared from the left at the same time.

No bad effects have been seen by the writer in any of his personal cases. One blister resulted in one case in which the knee was placed in the apparatus too near the pipe conveying the hot air to the metal box. Blech treated 200 cases with the Betz apparatus, giving 3621 treatments with a few superficial burns as the only evil consequences, these being due to the carelessness of the nurse. Schell reports a case which on the ninth day developed an acute nephritis lasting two weeks, and he considered it due to the increased work thrown on the kidneys after the treatments. Blech thinks this nephritis was an accident, as he had treated two cases of acute nephritis by superheated air with the apparatus applied to the lumbar region for one hour daily with the temperature at 400°, and immediate relief of the kidney symptoms followed.

Kirby and O'Malley treated over 300 cases, mostly surgical, with excellent results. Several severe scalds resulted from having too thin a covering for the skin. Why the patients permitted this is not readily understood, for they regularly complain when the temperature reaches too high a point. In the same article the authors state: "If the treatments are continued for any length of time, there is a progressive loss of flesh and strength amounting in one of our cases to 17 pounds for 30 heatings." Such a loss of weight is a most interesting observation.

Graham Reed details his results after superintending 1400 treatments with hot air. He used the Sprague apparatus, which can be made to include the chest and abdomen. Anemia, chlorosis, asthma, painful ovaries, pneumonia, bronchitis, lumbago and torticollis were among the conditions which were improved or cured. Dejerine, Chrètien and Landouzy, of Paris, agree in reporting beneficial results in cases of gout and rheumatism. James Stewart, in a paper read before the British Medical Society in Montreal, September 1, 1897, considered that hot air is the best treatment for cases of rheumatid arthritis. Virgil Gibney, however, in a recent paper, while acknowledging the relief of pain by hot air in that condition, believes that no permanent improvement is obtained. Satterthwaite reports cure or improvement in all of 32 cases, of which the majority suffered from rheumatism or sprains.

Wilson decided that benefit was derived in such conditions as sprains, hydrarthrosis, ankylosis, and for breaking up adhesions as in flat feet; but that poor results were obtained in cases of gout, rheumatism and rheumatoid arthritis. He advises the use of a high temperature in treating tubercular joints.

Kessler details his experiences very carefully. He used the Sprague apparatus and obtained uniformly good results in rheumatism, skin and kidney diseases.

Conclusions: We must admit that superheated dry air is not by any means a cure-all, and that it is at times disappointing, especially in chronic cases. In acute cases, however, especially surgical, or where pain or inflammation is present, the Tallerman treatment frequently works wonders. It is best employed as an adjunct to other treatment—medicine, massage, medical gymnastics, etc. Interesting observations are yet to be made, for instance, as to the effects of hot air on old tubercular joints, in which line of patients Homer Gibney and Wilson report good results. Certainly, in hot air we have a therapeutic agent always at hand, and one which will free us from many of the most obstinate cases which medical men encounter. The writer has selected a number of cases from the literature as illustrations, and also has written synopses of some private cases, the majority of which were sent to him for treatment by Dr. James W. Putnam.

BIBLIOGRAPHY.

Sarjeant, Lancet, Jan. 12, 1895.
Myrtle, British Medical Journal, Jan. 12, 1899.
Walsh, Lancet, Aug. 18, 1900.
Gibney, New York Medical News, July 21, 1900.
Blech, Philadelphia Medical Journal, Feb. 25, 1899.
Kirby and O'Malley, Therapeutic Gazette, Nov. 15, 1899.
Reed, New York Medical Journal, Sept. 17, 1898.
Taylor, Lancet, 1898, 2, p. 1385.
Philadelphia Medical Journal, 1898, 2, p. 1414.
Practitioner, 1899, 12, p. 169.
Gowers' Diseases of the Nervous System, Vol. I, p. 88.
Blair, Medical Review, St. Louis, 1897, 36, p. 37; 1898, 37, p. 422.
Therapeutic Gazette, Detroit, 1897, 3 s. 13, p. 721.
Chretien, Presse Medicale, Paris, 1896, p. 693.
Philadelphia County Medical Society Proceedings, Nov. 11, 1896.
Satterthwaite, Medical Review of Reviews, 6, 351.
Wilson, Annals of Surgery, Feb., 1899.
Gibney, Medical Record, March 2, 1901.

SYNOPSES OF 13 SELECTED PERSONAL CASES.

No.	Diagnosis	Symptoms	No. of treatments	Additional Treatments	Results
1	Colles' Fracture	M. 38. Had had a Colles' fracture of right wrist 3 months previously. When first seen there was marked stiffness of wrist-joint and tendons, edema, pain on movement; poor local circulation; muscles of forearm greatly weakened.	8	Passive motion and massage after each bath	Marked improvement in all symptoms. Patient discharged with normal wrist except for a certain amount of weakness and some slight restriction of motion.
2	Sciatica	M. 40. For 10 days past had had pain along sciatic nerve of right leg, very acute, increased by movements; tenderness over nerve in popliteal space. Walking an impossibility.	6	Rest	Gradual improvement. However, patient voluntarily stopped his treatments. The sciatica returned and was cured by rest and the local application of ices.
3	Muscular Rheumatism	F. 35. Acute muscular pains in neck and shoulder of one day's duration.	1		Cure.
4	Contusion to Lumbar Region.	M. 62. Acute severe pain and tenderness in left lumbar region following a contusion received while falling down stairs. Morphin and a hot water bottle had given no relief.	1		Complete relief of pain and soreness.
5	Coccygodynia.	M. 43. Previous history of horseback riding followed by tenderness over coccyx with radiating pains.	4		Symptoms ameliorated.
6	Neuritis	M. 62. For a week past had had burning, tearing pains at intervals about left elbow and forearm, made worse by exercise. Anesthesia gradually appeared following distribution of median nerve.	7	Sodium salicylate, phenacetine	The hot air relieved the pain each time temporarily, but did not prevent extension of the neuritis. Subsequently blisters were applied to painful points. Potassium iodide was given internally, and the neuritis disappeared.
7	Sciatica.	F. 45. Sharp pains in leg and thigh, with tenderness over sciatic nerve.	1		Temporary relief of pain and soreness.
8	Chronic Rheumatic Arthritis	F. 55. Stiffness, swelling and pain in and about both knees. Patient walked with great difficulty.	8		No improvement followed, so the patient was discontinued.
9	Traumatic Lumbago or Neurasthenia Spinalis	M. 50. Weight 230. Great pain and sensitiveness along entire spine, especially in lumbar region, caused by a railroad accident. No spinal cord injury. Pain dull, becoming sharp on movement. Pressure elicited great tenderness on each side of the spinal column.	16	Massage	After the first treatment the dull ache ceased entirely, and at the end of the treatment the patient could walk half a mile easily. The sensitiveness to pressure was almost gone, and pain was felt only when flexing spine.
10	Old Dislocation of hip.	F. 46. Prolonged history of pain and tenderness over sacro-sciatic ligament, due to previous dislocation of the hip. Walking slow and painful.	7		Relief of symptoms without recurrence.
11	Subacute Rheumatism	F. 50. Pain, stiffness and weakness in both elbows and hands. Patient was neurasthenic and suffered from endocarditis.	9	Rest, heart tonics, vapor baths, bromids and massage.	The treatments formed a useful adjunct to the other therapeutic measures, as the rheumatic symptoms lessened after each bath.
12	Neuritis	F. 28. Suffered from severe paroxysms of darting pain in left shoulder and about left elbow. Nerves very tender. Patient also bedridden from a myelitis of a year's duration.	About 15	Phenacetine, sodium salicylate.	Patient still under observation. The neuralgic pains have ceased.
13	Neuritis	F. 35. After exposure to intense cold weather, had severe paroxysms of darting, tearing pains in right shoulder and arm. Between attacks a dull aching pain continued. Tenderness marked over musculo-spiral and circumflex nerves. Paresthesia of fingers, and a diminution in sensitiveness.	About 10	Phenacetine, sodium salicylate.	Patient still under observation. Has improved steadily but slowly.

SYNOPSES OF 43 CASES SELECTED FROM THE LITERATURE.

Reference	Diagnosis	Symptoms	No. of treatments	Additional treatments	Results
1 Sarjeant. Lancet. Jan. 12, 1895.	Sprain of ankle.	M. 11. Typical symptoms, considerable effusion.	3		Relief of all symptoms. Child could walk freely after 3rd treatment.
2 " "	Acute Gout	M. 57. Sprain of right ankle, followed the next day by a severe attack of gout in great toe. Great pain and tenderness.	5		After first bath pain and tenderness disappeared from ankle and were much modified in great toe. After 3rd treatment could walk. After 5th could walk freely for 20 minutes.
3 " "	Chronic Rheumatoid Arthritis.	F. 64. Arthritis of both knees, shoulders, wrists and all finger joints. Had been treated medically for four years without improvement. All joints enlarged and painful, and movement limited.	9		Marked improvement followed each treatment, and after the 9th patient could walk and sew. Joints were movable and painless.
4 " "	Tubercular knee joint	M. 12. Knee had been kept in plaster of Paris for 7 months. Symptoms of disease had disappeared, but an attempt at movement caused great pain.	6		Motion increased from 45 degrees to 50 degrees. Grating disappeared and patient could walk freely.
5 " "	Chronic ulcer of leg.	F. 45. Ulcer had persisted for 5 years, and was size of palm of hand.	2		Base of ulcer much cleaner; edges showed signs of healing. 14 days later granulations had replaced lost tissue and margins were approximating.
6 " "	Chronic Rheumatoid Arthritis.	M. 71. Disease had persisted for one year. Both elbows and all the joints of the fingers stiff and painful.	5		The symptoms were so much improved that patient could walk without inconvenience.
7 " "	Sprain of ankle.	M. 22. Typical symptoms.	5		Relief of pain, tenderness and swelling.
8 " "	Sprain of ankle.	M. 24. Typical.	5		Relief of symptoms.
9 Myrtle. Brit. Med. Journal, Jan. 21, 1899.	Gout.	M. 67. Gouty history for 20 years. Wrists, hands, feet, ankles and knees full of acute gout. Patient practically unable to move.	Not recorded		After 2nd treatment was able to sit up. After 5th was free from pain and could walk with assistance. Patient discontinued treatment and relapsed.
10 " "	Rheumatism	F. 75. Joints of hip and knees still, painful and swollen.	7	Sulphur baths alternating with hot air, also sulphur waters internally.	After two weeks' treatment patient could rise and walk without assistance.
11 " "	None	M. 73. Pain for some months on outer side of left foot with cramps of toes, also pain on outer and inner side of leg below knee, preventing sleep.	6		After each treatment improvement occurred. After 6th symptoms disappeared and did not recur.
12 " "	Lymphangitis	M. 60. Had had locomotor ataxia for 20 years. Left leg gradually became swollen and twice its normal size, without pain; no pitting on pressure.	6		After 3rd bath leg perspired freely for first time. After 6th leg was of normal size and remained so.
13 " "	Gout.	M. 63. Of gouty family. Hands, wrists and fingers have suffered from attacks for 20 years. Great pain, disfigurement and helplessness.	9	Hydro therapy and mineral waters	Steady improvement. Hands better than for many years previous.
14 " "	Rheumatism	M. 70. For 18 months past rheumatic pains in and about left elbow.	3		Pain disappeared and did not return.
15 " "	Gout	F. 31. Gouty history. Severe pain and disability in hands and feet. Had been treated for two years without benefit.	6		No improvement whatever.
16 " "	Not given	F. 37. Right shoulder painful, swollen and stiff for three years. Electricity and massage had given no relief.	13		Patient could extend arm, raise hand to head and write comfortably after last bath.
17 " "	Sciatica	M. 48. Typical symptoms.	3	Sulphur water and baths.	After 3rd treatment, patient could bend over and unlace shoe, which he had been unable to do for 7 years.
18 " "	Sciatica	M. 46. Acute double sciatica for 9 weeks, being unable to rise without assistance, and unable to walk without crutches.	21		After first bath could walk with aid of stick. After 21st pain had disappeared and patient could walk 6 miles with comfort.
19 " "	Locomotor Ataxia.	M. 42. Symptoms for three years. Could not go up steps without assistance, and could not walk 150 yards without resting.	24		After last bath patient could walk four miles on a stretch and could climb three stories easily.

SYNOPSES OF 43 CASES SELECTED FROM THE LITERATURE.

Reference	Diagnosis	Symptoms	No. of treatments	Additional treatments	Results
20 Myrtle. Brit. Med. Journal Jan. 21, 99.	Gout	M. 66. Symptoms in hands and fingers.	6		Movement became very free.
21 " "	Chronic Rheumatism.	F. 55. Pain, stiffness and swelling about knee and ankle-joints.	4		All symptoms rapidly ameliorated.
22 Walsh. Lancet, Aug. 18th, 1900, p. 482.	Gonorrheal Rheumatism.	M. 45. Two weeks after a second attack of gonorrhea patient was attacked with pain in wrists and shoulders. Had had ineffectual treatment for 13 months.	About 12		Rapid improvement and cure.
23 " "	Eczema	F. 45. Had had chronic eczema of both hands for 2½ years. Treatment unavailing.	11		After last treatment, all having been given to one hand, it was free. After a 2nd series of treatments given to same hand the other became free from disease also.
24 " "	Chronic Nonarticular Rheumatism.	M. 45. Subacute chronic pain in right shoulder for two years.	11		Freedom from pain obtained.
25 " "	Rheumatism and chronic Endocarditis.	F. 50. Had had rheumatic fever four times. For past 6 weeks had had swelling and great pain in feet. Hands and shoulders stiff.	Not given		Marked improvement. Movements became free.
26 Gibney. N. Y. Med. News, July 21, 1900.	Gonorrheal Rheumatism.	M. Knees tender and painful. Marked swelling.	Treatments for 2 months		Swelling subsided, and patient could walk comfortably.
27 " "	Arthritis of hip.	F. 22. Had many of the symptoms of acute hip disease.	Treatments for 3 months		At end of 3d month patient walked freely without pain, but a slight limp remained.
28 " "	Rheumatism.	M. 56. Of rheumatic history. Pain, swelling, heat and tenderness in right knee.	Not given		Great improvement.
29 " "	Rheumatoid Arthritis.	F. 34. Swelling, sensitiveness and distortion of fingers and wrist.	Treatments for 5 weeks.		Patient able to flex and extend almost to normal. Swelling disappeared.
30 " "	Sprain and synovitis of left knee.	M. 35. While playing golf sprained knee, which resulted in a synovitis with effusion.	4	Bandage to knee.	Patient walked freely after 4th treatment.
31 " "	Sprain of right wrist.	M. 55. Right wrist tender and sensitive on movement.	Treatments for 2 weeks.		Cure.
32 Blech, Phila. Med. Journal, Feb. 25, 1899.	Synovitis of knee joint.	M. 22. Traumatism to knee resulting in acute synovitis. Repeated tappings had proved useless and effusion continued.	6		Cure.
33 Kirby and O'Malley, Therapeu. Gazette Nov. 15, 1897.	Sprain of right ankle.	M. 40. Signs of severe sprain.	3	Corterell dressing between baths.	After first treatment pain had disappeared. After third patient could walk.
34 " "	Sprain	M. Similar symptoms.	3	Corterell dressing after treatm'ts.	Similar result.
35 " "	Sprain of left ankle.	F. Similar symptoms.	1	Corterell dressing after treatm'ts.	Patient walked home after treatment.
36 " "	Sprain	F. 20. Severe sprain of right ankle with enormous swelling.	4	Corterell dressing	Cure.
37 Reed, N. Y. Med. Journal, Sept. 17, 98.	Chlorosis.	F. 63. Pallor, dyspnea, palpitation of heart and other signs of anemia. Baths given to trunk and extremities.	4		Alleviation of symptoms.
38 " "	Rheumatism	F. over 80. Personal history of rheumatism for 30 years. Extensive tophi in the knees with stiffness and difficulty in walking.	16		After 4th treatment "creakiness" disappeared, and after last treatment could walk 7 squares.
39 " "	Pleurisy.	M. Typical symptoms of acute attack of pleurisy.	1		One bath allayed pain and distress.
40 " "	Eczema	M. 31. Eczema of 3 years standing.	3		Some improvement.
41 " "	Rheumatoid Arthritis.	M. 59. History of rheumatoid arthritis beginning in right thumb 30 years before, and spreading until nearly every joint was involved.	58		Patient rendered far more comfortable than he had been in 27 years, although deformities remained.
42 " "	Rheumatoid Arthritis.	M. Previous history of rheumatoid arthritis, patient being unable to rise from a chair or to dress himself.	25		After 12th treatment patient could feed himself and ride a bicycle 6 miles. After 15th bath could chop and saw wood.
43 " "	Rheumatoid Arthritis.	F. History of 20 years' standing, with all extremities involved.	About 10		Deformities remained, but patient can walk and go downstairs.

THE PURE ACTIVE PRINCIPLE OF SUPRARENAL EXTRACT AND ITS WIDE RANGE OF APPLICABILITY IN OPHTHALMOLOGY AND RHINOLOGY.

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of Madison, Wis.,

In the short time that I have used the pure active principle of suprarenal extract, I have already grown to look upon this preparation as almost indispensable in the treatment of many cases of nasal and ocular troubles coming under my observation. Indeed, I feel that in value it is second only to cocain to the ophthalmologist and rhinologist.

In a number of cases of intranasal surgery in which I have used this extract in solution, it much more thoroughly controls the bleeding than does cocain, and after its use there is little of the tendency towards secondary hemorrhage which occasionally follows the use of cocain. It increases, apparently, the duration and intensity of local anesthesia when used in conjunction with cocain, and makes intranasal surgery far easier and pleasanter than it has been in the past. I have also used the solution of this active principle in many cases of acute rhinitis accompanied with intense congestion of the turbinal bodies; it gives prompt and comparatively lasting relief from the extreme discomfort accompanying this condition, and, instead of increasing subsequently the congestion present, as does cocain, I find that it rather shortens the progress of the trouble when suitable remedies for the condition are used along with it. It is also useful in flattening out the middle turbinal body when it is desired to make applications to the upper fossæ of the nose.

In ocular therapeutics the solution of this principle has also a rather extended range of usefulness. I have used it in one or two cases of trachoma in which the patient has been troubled by the relapses occurring in this affection, and I have found that when proper adjuvants are employed it shortens the course of this condition more than anything I have used. In lachrymal obstructions it is of very decided service in diminishing the pain caused by the passage of lachrymal sounds, being more useful in this respect than cocain, by reason of the fact that it has greater capacity for increasing the caliber of the lachrymal canal than has the latter drug. I fail to see that its use is attended with any subsequent aggravation of the condition present in the canal; in fact, if it has any lasting effect whatsoever, it seems to me to be rather in the way of improvement than otherwise.

There is also, seemingly, a field for suprarenal extract in the relief of obstructions of the eustachian tube which cannot be made to yield to air pressure by the Politzer process, or through the catheter. I have, as yet, had no occasion to use this product internally, and cannot speak of its value in that respect; but when applied externally, in the way I have noted, it seems to me to be entirely free from objectionable qualities and is undoubtedly a decided therapeutic advance.

CARBOLIC ACID AS AN INTERNAL REMEDY.

By S. HENRY DESSAU, M. D.,

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Carbolic acid, chemically an hydroxyl compound of benzol, was discovered in 1834 and introduced by Lemaitre and Declat into medicine and surgery about 1860. Through the influence of the brilliantly successful demonstrations of Lister, following upon the germ discoveries of Pasteur, the most extensive uses of carbolic acid since that time have been in the field of surgery. A few physicians, however, residing in various countries were led by reasoning similar to Lister's, to adopt its employment by internal administration in the treatment of those diseases, either supposed, or proven to be caused by an invasion of germs into the blood and tissues of the body. Its use in this direction, however, did not seem to gain in popular favor, owing, perhaps, to the fact that many cases of poisoning from its surgical use, especially in children as an application to large absorbing surfaces, began to be reported in medical literature; and also to the idea that if any beneficial results were to be gained as an internal antiseptic, the dose required to be given for this purpose would be so large as to prove far too dangerous a remedy. Then again the dark, smoky color present in the urine voided by one taking carbolic acid internally, which occurs after the urine is exposed to the air, formerly gave rise to the idea that the carbolic acid was acting injuriously upon the kidneys, as the smoky color of the urine was attributed to some form of blood alteration proceeding from the kidneys. Strange to say, this view is entertained at the present day by not a few. The idea that carbolic acid taken as an internal remedy, even in small doses, will injuriously affect the kidneys, especially of young children, was stoutly maintained by some eminent authorities as recently as 1889.

The matter presented in this paper is based upon indisputable clinical evidence, gained in an experience of six years' use of carbolic acid as an internal remedy, and the observations of its therapeutical effects in over 3000 cases. These cases embrace all ages, and the doses ranged from three-fifths of a grain to 12 grains, which latter would formerly have been regarded as almost fatal. These clinical facts, which can be easily verified by numerous medical gentlemen who have acted as assistants in my various clinics, and have witnessed with me the results of treatment, are offered to show, that all of those preconceived ideas prejudicial to the internal use of carbolic acid, are false and misleading, and that in carbolic acid we have as valuable and reliable a remedy in the treatment of certain diseases of germ origin, as any other in the entire pharmacopeia. Further than this I have no scientific data to offer.

According to Bartley, carbolic acid is prepared from that portion of coal-tar distilling over between 302° F. and 374° F. This is agitated with a concentrated solution of caustic soda when a crystalline carbolate of sodium is formed, while the neutral oils are left unacted upon. After the oils have been separated the carbolate is decomposed by hydrochloric acid and the impure carbolic acid thus obtained is again treated with sodium

hydroxide. On exposing this solution to the air, the greater portion of the impurities become oxidized and separate as a tarry mass. This mass is roasted, the carbolate dissolved out and the clear solution of sodium carbolate is again decomposed by hydrochloric acid and the resulting carbolic acid separated and submitted to distillation. From the portion passing over below 370° F. phenol separates out as colorless needles on cooling, which melt at 108° F., and boil at 364° F. When quite pure, carbolic acid is permanent in the air. Carbolic acid is found normally in small quantities in some specimens of human urine and castoreum. Gillespie in his work on the natural history of digestion states that the organisms of putrefaction in the intestinal canal when they multiply to an extensive degree, form carbolic acid normally; and further activity of the germs is thereby arrested. This is a neat example of nature's application for antiseptic purposes of the substance which was the first to be used by man in his recent departure in the treatment of disease, when he unwittingly employed a body formed by bacteria as a check to their growth and as an agent for their destruction.

The physiological action of carbolic acid is thus described by Brunton in his interesting lectures on the "Action of Medicines." Pure carbolic acid, when swallowed, acts like every strong acid, coagulating the albuminous tissues in the esophagus and in the stomach. There is violent pain all down the esophagus and in the stomach; vomiting, and, in fact, all the symptoms of gastro-intestinal irritation of an irritant poison. In small doses it acts as a stimulant to the nervous system, and later as an anesthetic and paralysant; so that it may first of all cause twitchings in the muscles, which may be succeeded by symptoms of paralysis. Carbolic acid unites with the sulphates in the body forming the double ethereal sulphates and glycocholate of phenol. Subsequently these become changed by partial oxidation into the dioxybenzols, pyrocatechin and hydroquinon, and these appear in combination in the urine. Immediately the urine is excreted these substances are set free probably by a fermentative process and undergo oxidation, giving rise to the brownish green color which is so prominent a feature of the urine in cases of carbolic acid poisoning. According to Cushing, in his work on Pharmacology and Therapeutics, the presence of glycocholates in the urine may lead to the reduction of Fehling's test solution, and so give rise to suspicion of glycosuria. The control test of fermentation will settle the doubt. This author also states that the passage of the double sulphates and glycocholates of phenol, hydroquinone and pyrocatechin through the kidneys are supposed to cause some irritation and albuminuria. Be this true or not, in those cases where I have found albumin in the urine during the administration of carbolic acid, the disease under treatment was an influenza, and the albuminuria could reasonably be attributed to the systemic infection of the influenza bacillus during the use of carbolic acid. This would naturally be expected to be the case when the toxin producing the albuminuria, as well as the other clinical phenomena, was seen to become less and less, as indicated until it was entirely eliminated under the treatment.

As suggested by Brunton, the affinity of carbolic acid for the sulphates in the body is used as a guide to the further extent of its use. A test solution of barium chlorid gives a white pdecipitate, insoluble in nitric acid with ordinary sulphates in the urine, but not with ethereal sulphates. So that if the former are present in the urine in abundance as denoted by the precipitate produced by the addition of barium chlorid solution, there need be no anxiety.

Carbolic acid was first recommended to me as an internal remedy by my late friend, Dr. Emil Noeggerath, some 30 years ago, and later my attention was recalled to it by R. Robie Wood, of this city. I remember using it for a time as an internal remedy for various diseases whose cause depended upon some variety of germ invasion, such as puerperal and surgical sepsis, erysipelas, diphtheria, scarlatina, and the summer diarrhea of infants, and I had known of its use by others to correct gastric fermentation. But as often happens in our experience, so much was said in those early days of my professional career against its use, that I allowed it to be displaced in my practice by other remedies, until about six years ago, when I again began the use of it. In the *Medical Record* of September 12, 1896, I published an article on "The Value of Carbolic Acid in Some Catarrhal Diseases of an Influenza Type Occurring in Children," giving my experience with it up to that time. Over four years further use of it, principally in young children, aggregating now over several thousand cases, has convinced me so thoroughly of its great value, especially in the protean forms of influenza as observed in children, with which the medical profession of this city have become so familiar in the past ten years, that I feel fully warranted in presenting the subject again to the attention of the profession. The advantages that have appeared worthy of a decided claim in favor of carbolic acid as an internal antiseptic remedy as against other remedies so classed that are less feared because of their non-toxic properties are, that carbolic acid in the first instance is the type of antiseptic remedies, that it is inexpensive for the poorer classes and dispensary use, a not unimportant feature, that it is easily soluble in water with the aid of glycerine, a matter not to be overlooked in the treatment of children, and that in my experience it does not effect any changes in the component elements of the blood corpuscles as do many other antiseptic remedies, either of the coal-tar or aniline series. It does not disturb nor depress the cardiac function either in children or adults, when administered to the latter even in 12-grain doses well diluted and repeated every two hours. The following case is given as an illustration.

Robert H., 7 years old, came to my clinic on December 13, 1899, for a cough of one week's duration. At times the cough was severe enough to cause vomiting. He has also a post-nasal catarrh. Physical examination showed no rales, but a mitral systolic cardiac murmur which did not appear to cause any symptoms. He was ordered one drachm of a 5% solution of carbolic acid every two hours and a nasal douche of normal salt solution for the catarrh. He returned on the 22d to have his medicine renewed, after which date he was well until January 8, 1900, when he had a relapse and again obtained a 5% solution of carbolic acid. No effect was produced at all upon his heart.

As to its harmful action upon the kidneys, as I have before stated, I have failed to witness any convincing evidence of it, evn in infants, after having now used it for over six years and in many thousands of cases. On the contrary I have not hesitated to employ it in several cases of influenza, complicated with a nephritis , in infants when albuminuria and casts wer present as a clinical evidence, and while other remedial agents were employed at the same time, all of these cases made good recoveries without any subsequent damage to the renal function.

I was called in consultation March 11, 1896, to see a girl 7 months old, bottle-fed on malted milk, who had been sick one week. The attack began with fever, cough, coryza and vomiting; there was some constipation. I found her with a rectal temperature of 105°F., rapid and irregular respiration, tongue furred with enlarged papillae projecting through, voice hoarse. Physical examination showed a few large bronchi over both lungs; there was no pharyngitis. Nurse noticed her straining on passing urine, which on examination was found to have a specific gravity of 1014, acid, contained albumin, large amount of renal epithelium and straight and curved granular and hyalin casts with a few blood corpuscles. As the case progressed, convulsive attacks slight in character occurred on the 9th day of my attendance, and a well marked one on the 10th day, followed by some edema of the face and feet. Urine was passed in fair amount and continued albuminous up to one month from the date of my first visit. She was placed upon a 1% solution of carbolic acid in drachm doses every two hours and 1-10 gr. tablets of calomel until the bowels moved freely. The carbolic acid was continued as the only treatment until the convulsions recurred when chloral hydrate and bromid of sodium was given per rectum, and hot baths three times a day with plenty of boiled water as a drink. In addition to this 1-16 drop doses of Tr. cantharides were given every three hours. This was continued for only three days. Ferratin was used later on. The original treatment was continued until the temperature returned to normal, which was on April 7th, and was resumed 10 days later when a relapse appeared. The child made a complete recovery and is now a fine specimen of health without showing any subsequent disturbance of the kidneys, although she has had other severe attacks of influenza since, for which she took a 5% solution of carbolic acid, with the best results.

As to the matter of the quantity taken into the circulation being sufficient to check or inhibit the growth or development of the disease germ, that remains at best a theoretical speculation. While no attempt has been made by me to study the influence of the treatment by carbolic acid upon the Pfeiffer bacillus, there are at least good and reasonable grounds for believing that the non-toxic doses of carbolic acid do exert an antiseptic or inhibitory effect upon the reproduction of the specific germ; for the practical result is, that during its use there is a marked and steady improvement of all the clinical symptoms. The temperature is reduced, pains are relieved, and local disease processes removed. As Gillespie has pointed out, it is entirely upon this principle that the agent is employed. Moreover, as I will soon show, Wigglesworth, of Liverpool, Eng., has demonstrated the antiseptic power of carbolic acid internally administered, not only as a cure, but as a preventive modifier of a contagious disease, such as scarlatina.

This reminds me that after the publication of my first paper upon the internal use of carbolic acid, Wigglesworth published in the *Lancet*, April 3, 1899, an article upon the use of carbolic acid in influenza, wherein he recommended doses of 12½ grs. diluted in syrup of orange peel and water repeated every two hours, and reported a case where by accident 108 grains were taken in 18 hours without any unfavorable results. This led me to increase the dose I had up to that time employed, which was 1 drachm of 1% and 2% solution, as in some cases the beneficial effects were not so manifest as I wished, and since about June, 1899, besides the 1% and 2% solutions which I continue to give infants under two years of age, I have employed a 3% and 5% solution in drachm doses every two hours for older children, and dessert and tablespoonful doses of the 5% solution every two hours for adults. My experience with these increased doses has been, that with the exception of an idiosyncrasy manifesting itself in vomiting from a peculiar susceptibility to gastric irritation, it is a perfectly harmless remedy when diluted and taken in doses of not more than 12 grains every two hours. Occasionally a slight dizziness of a temporary nature is experienced soon after taking the remedy.

Frances K., 8 years old, came to my clinic December 4th, 1899, with a severe dry cough, worse at night, of one week's duration. There were a few coarse rales over both lungs. She got a 5% solution of carbolic acid, 1 drachm every two hours, which was renewed on the 8th, 13th, 15th and 20th, when she was discharged well. After the 3rd visit she complained that she became dizzy after taking the medicine. It was continued, however, and she did not afterwards experience further dizziness.

As will be observed, the poisonous effects of carbolic acid are to be looked for in its action upon the stomach and later upon the nervous system. Where the continued use of carbolic acid in medicinal doses produces poisonous symptoms, if it really does, as it is quickly eliminated from the circulation, there are signs of collapse, such as a cool, moist skin, slow pulse, sighing respiration, and in more marked cases general prostration of the muscular system. In a case reported to the Northwestern Medical and Surgical Society of this city by Dr. Seneca D. Powell, where a high enema of a pint of a 2% solution had been given a child two years old, there were all the symptoms of collapse. With the administration of hypodermic injections of alcohol and enemata of the same, according to Dr. Powell's well-known discovery of the antidotal action of alcohol together with the employment of artificial respiration, the patient fortunately recovered.

According to Bartley, carbolic acid is isomeric with alcohol, but does not furnish acids on oxidation, does not divide into water and hydro carbon under influence of the hydrating agents, nor react with acids to form ethers.

Alcohol has been shown by Powell to be a true antidote to the local effects of carbolic acid. Whether this is due to a chemical or other action I am unable to state, but it would seem from several cases reported in the medical journals, in which alcohol had been used internally with success in cases of poisoning from carbolic acid, that it was a true physiological antidote. Sulphate of soda is also a chemical antidote, and may be used either by subcutaneous infusion, or by enema, the carbolic acid uniting with the sulphate of soda in the blood to form an insoluble carbolate of soda. It is of the highest importance that the carbolic acid should be chemically pure, for according to Declat such impurities as cresylic and rosaic acid and rosalin pro-

duce poisonous effects. For this reason I always use the chemically pure, or Calvert's No. 1 acid.

In estimating the therapeutic value of carbolic acid in influenza in all of its many various forms, from the barely recognizable to the most typical, it will, in my opinion, be found that it is in the mildest or ambulant form as occurring in children, in which they will not, or cannot, be confined to bed, which is so essential a measure for a definite shortening of the trouble, that its greatest success will be demonstrated. We must all be familiar with that the old reliable expectorants given for the dry teasing coughs, sometimes stimulating the paroxysmal character of pertussis, usually worse at night, which feature, by the way, is regarded by Dr. Thompson, of this city, in a paper published in the *New York Medical Journal*, January 26, 1901, as more of a nervous character, are, under the conditions of frequent exposure to sudden changes of temperature, entirely useless remedies for shortening the trouble. It is under such favorable circumstances as these that carbolic acid proves its remedial excellence, all symptoms, whether catarrhal or otherwise, disappearing in from one to three weeks.

The following cases are given as various illustrations:

Vincent S., 1½ years old, came to my clinic September 14, 1900, with a cough he had had for two months, worse for pas week, has insomnia, temperature 100° F. in rectum. Physical examination reveals coarse dry rales over both lungs. Was given 1 drachm of a 2% solution of carbolic acid every two hours. September 17th, has laborious respiration, no dulness, no increase of cardiac dulness. fine dry rales heard at base of left side, no bronchial respiration, no dullness, no increase of cardiac dulness. Medicine was renewed; 19th much improved; medicine renewed, from which time he fully recovered.

Mary H., 18 months, came to my clinic March 1, 1899, with a laryngeal cough of four days' duration. Temperature 104°F. in rectum, fine dry rales heard over both lungs. There was impaired resonance on left side. Ordered 1 drachm every two hours of a 1% solution of carbolic acid. March 3d, condition better, dulness absent, temperature 101 4-5° F. in rectum. Carbolic acid renewed; 6th, temperature normal; treatment continued for a week, when she was discharged well. This case shows the decrease of temperature.

Katie F., 11 years; came to my clinic May 19, 1899, with a pharyngitis of 2 weeks, cough and coryza; feels chilly and feverish at times; anorexia; continual headache. Ordered 5% solution of carbolic acid, 1 drachm every 2 hours. which was renewed on the 24th and 26th. Reported on the 31st as well.

Grace N., 2 years old, came to my clinic January 14, 1900, with a cough and excoriative coryza of two weeks' duration. Temperature 100° F.; nasal respiration obstructed; no rales found in lungs; there was an acute pharyngitis. A 3% solution of carbolic acid, 1 drachm every 2 hours was given. Patient seen on the 22, 26 and Feb. 2, when she was found well and discharged.

Norman W., 4 years old, came to my clinic Jan. 22, 1900, with a cough of three weeks' duration, which was worse at night. Was given 1 drachm every 2 hours of a 5% solution of carbolic acid. Returned Feb. 26th when mother stated that the cough was so much relieved after using the 2 ounces dispensed, that she did not think it necessary to return until present date, when a relapse had occurred, for which she wanted the same medicine.

A child, 11 months old, came to my clinic May 19, 1900, with diarrhea and persistent vomiting. Is breast fed, together with now and then a little bread to bite on. Temperature 103° F. in rectum. Vomited matter yellow in color. The weather was not warm enough to cause diarrhea, and a diagnosis of intestinal influenza was made. 1 drachm of a 2% solution of carbolic acid was ordered every 2 hours. Was not seen again until the 22d when all symptoms were improved. The medicine was renewed, after which recovery was complete.

Anna McG., 2 years old, came to my clinic April 20, 1900, with a severe cough, causing vomiting, of 3 weeks' duration. A few shy rales were heard on the left side. Temperature 102 4-5° F. She was ordered 1 drachm of a 3% solution of carbolic acid every 2 hours. Mother returned May 28th, saying the cough was so much better after the first visit that she did not need further treatment. She came with a relapse of symptoms. Temperature 100° F. The 3% solution of carbolic acid was renewed. June 1st, temperature normal, when she was discharged well.

The following was the youngest case in which I have used carbolic acid; Linola A., colored, 5 weeks old, came to my clinic January 16,1899, with a persistent cough of 2 weeks' duration. Ordered a 1% solution of carbolic acid, 1 drachm every 2 hours, which was renewed on the 30th, when she developed an attack of pertussis, which she passed through well, and when 11 months old was treated again for a cough and coryza with a 2% solution of carbolic acid. She was seen a year later for an attack of indigestion.

In not a few instances of severe catarrhal complications, however, I have found that an addition of citrate of potash in the proportion of a drachm to two ounces of the carbolic acid solution, or the alternate use of carbolic acid with a mild sudorific expectorant mixture, such as solution of the acetate of ammonia fluid drachm 4, sweet spirits of nitre and syrup of ipecac each a fluid drachm 1; syrup of senega, fluid drachm 1; syrup of lemon fluid ounce 1; drachm 1 as a dose for infants, will accomplish better and quicker results than either of the remedies given alone. It is in the more marked cases in which there is high fever with general malaise and extensive catarrhal involvement of the upper air passages that the therapeutic results of carbolic acid are most brilliantly shown. Even when a pneumonic process has begun, the entire condition is speedily improved under the administration of carbolic acid as the only remedy.

John L., 3 years old, came to my clinic Nov. 8, 1899. Had fever 2 days. Began with cough, vomiting and occipital headache. Tongue furred and dirty. There was bronchial respiration with dullness over left apex; temperature 103° F. in rectum. 10, temperature normal, soft rales over lungs, better in every way. He got a 5% solution of carbolic acid, 1 drachm every 2 hours. Was discharged as well Dec. 1st.

The internal employment of carbolic acid should always be in the form of solutions of different strengths. I think this plan is safer to avoid mistakes. Thus, in ordering a 1% solution made with the addition of 1 drachm of glycerine to every two ounces of water, one drachm of the solution would represent three-fifths of a drop or grain of the acid, 1 drachm of a 2% solution would represent one and one-fifth grains or drops, a like quantity of a 3% solution one and four-fifth grains or drops, and of a 5% solution 3 grains or drops. I only propose here to give my own clinical experience of the use of carbolic acid as an internal remedy in the treatment of influenza, but there is a broader field for its use in other germ diseases. Dr. Author Wigglesworth publishes in the *Lancet* an article republished in the *Times and Register*, February 12, 1898, upon the treatment of scarlatina with carbolic acid, in which he gives it the highest praise after an experience of 16 years in its use. He recommends carbolizing the well children in a family where scarlatina occurs, regarding in the same manner as Flugge the effect as one of attenuating influence upon the specific agent of contagion, so that after the subject is exposed to the contagion of the disease

it is contracted in the mildest form with complete protection against any subsequent attack. He even goes so far as to state that if the original case is mild and fully carbolized, he would allow the well children of a family previously carbolized, to be exposed to the infection, feeling sure that they would receive an attenuated poison, similar to a varioloid after vaccination, which would be shown of all dangerous sequelae, which in truth are the most dreaded features of the disease. Woods, of Philadelphia, in the *New York Medical Journal*, September 9, 1899, recommends the hypodermic use of carbolic acid in the treatment of tetanus, and Bacelli, of Paris, is reported by Delore in the *Gazette des Hospitaux*, September 4, 1900, page 1119, as using 2 c.c. of a 2% solution injected into the affected muscles every 4 hours for the same disease. He claims that it acts with more energy than any other antiseptic upon the tetanus bacillus. Rothe in the *Deutsche Medicinische Wochenshrift*, Nos. 11 and 12, 1880, recommends carbolic acid with sol. iod. comp. in the treatment of typhoid fever, which method was subsequently adopted and published by Bartholow, of Philadelphia, and has become a favorite treatment with many physicians. In summing up my views as to the value of carbolic acid as an internal remedy I cannot praise it too strongly. It is without doubt the type of general internal antiseptic, and consequently is a rational remedy for the treatment of germ diseases. It is an entirely safe remedy when used judiciously, that is to say, in free dilution, and the dose graduated to the age of the patient. In this respect it is certainly as safe as other powerful toxic agents that we daily use. The internal administration of carbolic acid in solution by way of the stomach is decidedly safer than in the form of enema, or as a local application, even when weak solutions are employed, for in the latter it is impossible to regulate the quantity that will be absorbed. A local application of even a weak solution, if the greatest watchfulness is not observed, may produce gangrene. So far as I can judge there are no reactionary manifestations, nor cumulative effects. I can honestly affirm that up to the present date, I have not been aware of a single accident from the remedy in my hands. Finally, it gives good, speedy and permanent results, even under the most unfavorable conditions, and it is a remedy, the value of which, owing to unjust and unsupported prejudices, has remained neglected for too long a time.

Treatment of Tuberculosis of the Knee Joint.—Townsend. (*Jour. Am. Med. Ass'n*, Jan. 12, 1901), divides the treatment into two divisions: 1. Constitutional; 2. Local. In the local treatment we should have in view: (a) the proper protection of the articulation; (b) perfect rest of the joint; (c) the prevention or correction of deformity; (d) the removal of the tuberculous process; (e) the treatment of complications. [T. M. T.]

The Treatment of Tuberculosis with Intra-venous Injections of Cinnamic Acid.—Hoedlmoser, (*Wiener. Klin. Wochenschrift, 1901, No. 9, pp. 209*), claims to have observed marked improvement in three cases out of eighteen. A case of tuberculosis of the peritoneum was uninfluenced by this remedy. A number of other cases of tuberculosis with pulmonary lesions remained either unchanged or became worse. A case of tuberculous abscess of bone improved markedly under this treatment. Hoedlmoser believes that further experiments with cinnamic acid are justifiable. [M. R. D.]

Abstracts of Therapeutic Literature.

The Splitting up of Salol in the Body.—Bonanni. (*Moleschott's Untersuchungen z. Naturlehe*, XVII. 1. pp. 39, 1900). Experiments performed by the author on animals showed that the various juices of the alimentary tract act together in the splitting up of salol; even the saliva takes part in this metamorphosis. In the full, as well as in the empty stomach, salol splits up into its constituents, salicylic acid and carbolic acid, but may also be be absorbed without being split up. The principal influence upon this phenomenon is afforded by the pancreatic juice; the bile and intestinal secretions acting as auxiliary agents to the pancreas. [M. R. D.]

Subcutaneous Injections of Hemoglobin.—A. Kuntzen and Okrumacher, (*Ztschr. f. Biol.*, XL. N.F. XXII, 2. pp.228, 1900). experimented with hemoglobin of horses by injecting it subcutaneously into guinea-pigs, rabbits and dogs. The animals were able to endure one gram of hemoglobin for every kilogram of their weight without inconvenience. The decomposition of albumin was increased. According to many investigators after injections of hemoglobin, iron albuminates were found deposited in the spleen, liver and bone marrow, similar results being also observed when feeding the animals with the salts of iron. These iron salts which form iron albuminates in the liver, as Kunkel has shown, may be utilized for increase of hemoglobin. [M. R. D.]

The Treatment of Chlorosis.—E. Grawitz, (*Ther. d. Gegenw. N. F. II. 6, 1900*), calls attention to physical influences as etiological factors in chlorosis, and believes that removing the patient from unfavorable surroundings is productive of great benefit. Grave cases of chlorosis should be put to bed. The author had no success with venesection but recommends sweating. Constipation should be treated with saline purgatives. The diet should be carefully regulated, beginning first with milk and subsequently very light food; alcoholic beverages should be prohibited. The author also recommends iron as the remedy although he cannot state how it does good, and notwithstanding that in many cases recovery takes place without iron. He recommends sesquichloride of iron, as all irons are very likely transferred into chloride in the stomach. The modern organic preparations of iron in spite of all the alluring physiological explanations have no particular preference. In addition to the iron he recommends quinine and arsenic. He lays particular stress upon massage of the extremities and cool moist sponging. As prophylaxis he recommends, paying particular attention to the condition of the circulatory apparatus in early childhood. [M. R. D.]

Treatment of Gall-Stones with Olive Oil.—Witthauer (*Muenchn. Med. Wochschr. XLVII. 48, 1900*), is an advocate of the treatment of gall-stones with olive oil. He begins the treatment by giving a wine glass full of oil, to which peppermint oil has been added, at night, and orders the patient to drink a little brandy after the ingestion of the oil. Should the patient not be able to take the oil by the mouth, 400-500 c.cm. of the oil are injected into the colon. The author believes that by this manner of treatment many patients can be spared an operation. [M. R. D.]

Treatment of Incontinence of Urine in Children with Rhus Aromatica.—Perlis, *Gaz. hebdom. 1900, No. 88*), recommends this drug in incontinence of urine in children, and prefers the fluid extract to the tincture. The unpleasant smell and taste may be overcome by the addition of an aromatic syrup. The dose in some cases may be increased to 80 drops a day. After 6 to 12 days the incontinence may increase and may continue for 10 days, after which rapid improvement occurs: during the exacerbation considerable thin urine is voided. Recovery is generally complete from 20 to 40 days. Among 156 cases treated by this remedy, some of which were taken from literature, others occuring in private practice, there were 102 recoveries, 41 improvements and 13 failures. The author has never seen injurious effects follow the employment of this remedy. [M.R.D.]

Iron as a Medicament Absorbed by the Duodenum Only.—M. Cloetta, (*Arch. f. experim. Pathol. u. Pharmakol. XLIV. 5 u. 6 p. 363, 1900*), states that although iron is principally absorbed in the duodenum it is a mistake to assume that it is absorbed only in this portion of the gastro-

intestinal tract. The author discovered that the iron-nuclein, a very resistant organic preparation of iron, was also absorbed further on in the intestinal tract, at least in the upper portion. Although the iron leaves the stomach fit for easy absorption, chemical influences soon change it, so as to render it less assimilable. The author believes that bile as well as the secretions from the pancreas and intestines cause this change. [M. R. D.]

The Treatment of Influenza, and the Grippal Affections.—L. Bourget, (*Therapeutische Monatshefte, 1901, No. 3*), has employed the same external method of treatment in grip as he has in rheumatism. His treatment is based upon the principle that salicylic acid or its volatine combinations do good by cutaneous absorption. He rubs the whole thorax of the patient with aromatic salicylic liniment and carefully covers the patient up. Twenty to thirty minutes thereafter salicylic acid can be demonstrated in the urine. In addition this procedure has the advantage that it disinfects the upper air passages. During the last great epidemic the author has obtained excellent results from this treatment. The atmosphere of the room must be kept pure.

The Treatment of Tuberculous Joints with Sun Baths.—Millioz, (*These de Lyon, 1899, Modern Medicine, Nr. 5, 1900*), recommends the employment of sunlight in the treatment of tuberculous joints in the following manner: The patient is comfortably placed in the open, with the diseased joint freely exposed to the sunlight, and with the head protected. If the upper extremeties are the seat of the disease, it would be better to allow the patient to walk about. During the intervals between the sun baths the joint should be protected with sheep's wool, or better still well bandaged. Sometimes the joint becomes more painful after the first or second bath but the pain generally soon disappears. Should the pain persist, treatment should be stopped for a few days. Rapid pigmentation of the skin under the influence of the sun's rays is an indication of rapid recovery. The joints become reduced in size, the secretion less purulent, the skin assumes a healthy appearance and the fistulae close. These results require persistent treatment for months. This is another acquisition to the treatment of tuberculous affections since Finsen instituted the treatment of lupus with ultraviolet rays. [T. L. C.]

The Treatment of Leprosy by Serum-therapy.—Laverde, *Rapport sur un travail du Dr. Jesus Olaya Laverde, Bull. de l'Acad.* 3. S. XXXIX." p. 30. Janv. 11, 1898), obtained a serum from a goat previously injected with blood from lepers. and claims that the serum so obtained has been productive of excellent results in 60 cases of leprosy. After a febrile reaction all the symptoms markedly improved. [M. R. D.]

Spleno-Medullary Leukemia: Remarkable Tolerance of Arsenic.—Heaton, (*The Lancet*, Jan. 26, 1901), reports a case in an advanced stage, the blood showing typical features and the proportion of red corpuscles to leucocytes being 12 to 1 . Arsenic by the mouth gave gastric irritation and hypodermic injections were advised. In a total number of 271 days, including intervals amounting to 58 days, hypodermically there were administered as follows: Arsenious acid 5½ grains, arseniate of soda 10.5 grains; sodium cacodylate 10 2-3 grains. In addition 10 2-3 grains sodium cacodylate were administered by the mouth. The maximum dose administered at one time was 2 2-3 grains of arseniate of soda, equivalent to four drachms, 26 minims of liquor sodiae arseniatis. No symptoms of poisonig were produced. The urine contained a large quantity of arsenic for 24 hours after injection. The solution used contained 1 part of a solution of eucaine hydrochloride B to 500 parts of water, 15 minims containing one grain of arseniate of soda. Each injection contained 20 minims and was warmed to blood heat, as cold fluid will cause much local irritation. The solution must be filtered and boiled frequently, as it appears to undergo some chemical change if kept for more than a week, when it causes irritation. The administration of cocodylate of soda by mouth was always followed by a taste of garlic and by gastric disturbance. [T. M. T.]

A Modification of Flechsig's Method in the Treatment of Epilepsy.—Meyer and Wickel, (*Berliner Klinische Wochenschrift*, No. 48, 1900), begin with opium alone, starting with small doses, 5 cgm., three times a day, gradually increasing until the end of six or seven week, when the dose has attained 9 cgm. The maximum dose is only given one day after which the bromide mixture is substituted—potassium bromide 1 part, sodium and ammonium bromides each 1 part, the dose being 6 grammes. This mixture is steadily increased so that at the end of a week the dose is 9 grams. This is the maximum dose and is continued for a long time or until definite improvement occurs. It is necessary that the digestive functions and the function of the skin should be carefully regulated. During opium treatment daily cold baths should be given, of short duration and a temperature of 24°C. In a day or two the temperature of the bath should be lowered a degree and duration limited to nine minutes: the next day, reduction of one minute in time, and the temperature 22°C. This should last a week. Under the bromide treatment the temperature and duration of bath should be the same as at the beginning of the opium treatment. Diet should be easily digestible, all nitrogenous food or beverages being avoided or reduced to a minimum. [T. M. T.]

Note on the Treatment of Epidermoid Cancer by the Roentgen Rays.—Williams, (*Boston Medical and Surgical Journal*, Jan. 17, 1901), is convinced that the X-rays are of value in the treatment of certain forms of cancer. His experience that either in the X-rays themselves or in some other form of radiation from an excited Crookes' tubes, lies a valuable therapeutic agent in epithelioma, and that the beneficent action of the X-rays can be brought about without causing a burn. The foul and nearly unbearable odors cease, the discharge becomes less and the growth steadily diminishes in size. The earlier the treatment the better, and he also states that it is not impossible that the curative effect will be limited to superficial growths, though it will be useful in relieving pain in other forms. [T. M. T.]

Treatment of Prostatic Hypertrophy.—Syms, (*Jour. Am. Med. Ass'n*, Jan. 12, 1901), considers but two methods. The first and most radical is some form of prostatectomy. The second is prostatomy, performed by means of an electric cautery knife, known as the Bottini operation. The latter does not pretend to remove the gland but merely effects a lowering of the urethral canal by dividing the prostatic portion in such manner that the bladder is able to empty itself voluntarily. This operation has been but recently revived, and has been recommended by able men in this line. Its advocates do not claim that it is efficient in every case and it still remains to be demonstrated how permanent the improvement may be. In the former operation Syms thinks that not enough care is taken in the judicious selection of cases, and that if this were done the statistics would be more favorable. He claims that the proper time to do prostatectomy is before great damage has been done to the bladder, urethra and kidneys: in other words it should be done as soon as it is necessary to use the catheter. Never operate on men whose arteries are markedly degenerated, whose circulation is poor and who are decidedly feeble, but on the ordinary man of 60 or 65 whose bladder is still in good condition. [T. M. T.]

Cerebrospinal Meningitis, Treated by Repeated Lumbar Puncture.—J. A. Koplik's (*Med. News*, March 23, 1901), procedure is to puncture as often as the symptoms of pressure or accumulation of exudate appears, i. e., continued headache, accompanied by periods of somnolence and delirium, repeated chills with sharp rise of temperature, an increase in the rigidity or opisthotonus, increasing or continued coma. If the puncture is successful, it can be repeated if necessary. The fluid withdrawn varies in quantity. In his cases it was 3 to 50 c.c. at each puncture. No injurious effects are reported. The effect on the pulse and respiration is negative. [T. M. T.]

Carbuncle.—A. C. White, (*Jour. Am. Med. Ass'n*, Feb. 16, 1901), applies the spray of liquid air at the opening of the carbuncle, using it quite freely, then thorougly freezing the external surface, which must be cleaned of discharge resulting from injecting the air into the carbuncle. After freezing, the carbuncle should be dressed with a dry, absorbent dressing, so that the discharge which will be abundant and accompanied with considerable bleeding can be absorbed. The reaction from freezing takes place in about twenty minutes and it is to this extreme hyperemia produced by the liquid that he ascribes the successful result. One application is necessary in 24 hours, after which the pain ceases. [T. M. T.]

The Ventilation of Schools.— *The Medical Press*, Jan. 23, 1901). The question of school ventilation is one to which

there is not enough importance attached, and there are circumstances in which the cubic space per head is often limited by necessity. The minimum space for an elementary school is 100 cubic feet for each pupil, with eight feet of floor space. In London the allowance is 130 cubic feet of air space, and 10 feet of floor space per head, but a better space would be 150 cubic feet and 15 square feet respectively. [T. M. T.]

Operative Cure of Severe Sciatica.—(*The Medical Press*, Jan. 30, 1901). The following operation was done on a man of 26, suffering from recurrent sciatica: Resecting the posterior roots of the sciatic nerve after exposing the 11th and 12th dorsal and first lumbar vertebrae. The operation wound was left with a small drain after the skin flap was replaced and the dura was sutured with catgut. After operation the patient could move his limb, which had not been used for months, while sensation was absent. The second day acute pain was felt along the internal saphenous nerve, which proved rebellious to treatment and was finally cured by resecting the nerve on the 8th day after the primary operation. [T. M. T.]

Some Fallacies of Therapeutics (*Medical Record*, March 30, 1901,. Vol. 59, No. 13).—George L. Peabody contributes a suggestive article upon some fallacies of therapeutics. He calls attention to that class of mixtures known as "tonics" and "bitters" which are largely consumed by the laity. He has found these very generally to contain a large percentage of alcohol. Almost all of these compounds are sold as being non-alcoholic. The writer believes that in a vast majority of these cases in which bitter substances actually do increase the appetite this is due to the fact that the mixture contains alcohol.. He states the boric acid is another drug which furnishes an illustration of the authority of the tradition and the consequent propagation of error. He believes that the disinfecting power of boric acid is so trifling that for practical purposes in this application it must be disregarded entirely. The use of tannic acid is another agent which may be considered of doubtful value. He believes that there is no warrant for the very convenient opinion that after its absorption it can produce styptic or hemostatic effects upon remote organs. Ergot is known to produce a primary fall of blood-pressure, which is followed almost at once by an enormous and persistent rise of pressure in the arteries. There is no proof that ergot causes any contraction of pulmonary vessels, and it is known to cause a rise in pressure in the pulmonary artery, yet in spite of these facts it is recommended to arrest pulmonary hemorrhage by some authors. Lithium is a drug in regard to which much false impression exists. It is practically valueless as a solvent in gout, even when given in reasonably large amounts, and it is especially likely to disorder digestion. Speaking of arsenic, the author mentions the fallacy that a toxic dose which causes death, must necessarily act as a preservative of the body. Calomel, he says, is still given to stimulate the liver, whereas experiment has long since proved it to be an hepatic sedative. It is at the same time a cholagogue, and and so is any laxative which acts upon the upper part of the small intestine, and thus causes a discharge of bile that might otherwise be reabsorbed. His conclusions regarding the usefulness of the iodids are that except in syphilitic disease they have no power of removing hyperplastic connective tissue or absorbing exudation. He does not believe that they are of any value in chronic lead poisoning. This writer also believes that the sphere of usefulness of oxygen inhalation under ordinary oxygen pressure is really very limited. [T. L. C.]

The Application of the Method of "Sufficient Dose" in the Treatment of Some Maladies of the Nervous System: Especially Grave Forms Associated with Migraine, Meniere's Vertigo, Neuralgia and Tic douloureux. Dr. Gilles de la Tourette (*La Semaine Medicale*, January 30, 1901) presents studies upon the method of treatment originally expounded by Charcot, based upon the administration of sufficient dose of bromide in epilepsy. Having determined the personal equation of the patient by the establishment of his point of toleration for the bromide, a dose is maintained for a period of time which is found to be sufficient to lessen the cortical motor excitability, and to cause the disappearance of the attacks. The treatment was originally used in epilepsy, but the writer believes that it has equal value in Ménière's vertigo and cases of severe neuralgia and tic douloureux. The author first discusses the treatment of grave forms of nervous disorders associated with migraine. It is applicable to all forms, from the simple migraine to the severe types with accompanying scintillating scotoma, hemiopia and even transitory aphasia. A case is reported of a young woman of 34 years, who had suffered for a long period from attacks which lasted 3 full days of each week, compelling her to remain in bed and to abstain from all food. After some 5 months of treatment by the bromides there was a great improvement. The second case in a patient of 58 years, who had suffered for a long time from a grave migraine accompanied by a right hemiplegia after a very severe attack, which disappeared after 8 days' treatment with bromide of potassium. This case was followed for 2 years, the patient took progressingly increasing and decreasing doses of bromide. There was a gradual restoration to health. His third case was one of ophthalmoplegic migraine in a young man of 35 years. A cure was brought about by prescribing rapidly increasing doses of bromides up to 7, 8 and 9 grams. The pupillary phenomena from this treatment showed themselves in the third week. Regarding the treatment of Ménière's vertigo, he believes with Charcot that the disease depends upon a hyperexcitability of the labyrinth analogous to corticomotor excitability, and he reasons that as bromides lessen the latter condition, sulphate of quinin ought to suppress the labyrinthine hyperexcitability. Quinin is given to the point of toleration, then the dose is decreased and finally increased again. After a period of 2 or 3 months, sometimes longer, a complete cure will be brought about. For the treatment of tic douloureux, he recommends .06 cm. of extract of opium per day. This is increased every day or every other day by a pill of .02 cm. and the point of toleration will indicate when sufficient dose has been attained. The toxic influence of the drug must be carefully watched. In the first period of treatment 30 to 40 cm. may be given in from 5 to 7 days, after which time it is necessary to increase it with care. The patient should be carefully guarded against cold and the chamber kept at an equal temperature. After this first period the dose should be diminished daily and very gradually.

[T. L. C.]

The Tolerance of Bromides by Aged Epileptics.—C. Féré. (*Revue de Med.*, 1900, p. 1) says bromides are tolerated with great variability. They should not be administered at the beginning in too large doses. Acute and chronic bromism need not be feared in patients under observation and in those who do not suffer from any particular organic lesions. The bromides are eliminated by the urine long after administration by the mouth has ceased, showing the cumulative action of the drug; experiments upon animals show that the drug accumulates more in the liver than in the brain. After some time a sort of equilibrium is established between the administration and elimination of the drug. In renal affections, arterio-sclerosis, and in the aged, the permeability of the kidney may be affected. The author has obtained good results by continued and increasing administration of bromides in the aged. [M. R. D.]

Atropine Before Ether Anesthesia.—Dr. Ludwig Braun, (*Cent. fuer Chirurgie*, No. 17, April 27, 1901, p. 441) referring to Reinhard's recommendations in No. 11 of the above journal of the injection of atropine before beginning etherization to "prevent the occasional profuse secretion of saliva and mucous from the mouth and the respiratory tract," says that although Reinhard has never seen deleterious results occur after the admanistration of atropine in these cases, atropine is not devoid of harm, and quotes a case of grave intoxication after an injection of atropine for ileus. The author believes that if a good quality of ether and a good mask which he describes, are employed, that atropine is superfluous and dispensable. [M. R. D.]

On the Injection of Sodium Cinnamylate, (Narti cinnamylici) in Tuberculous Patients), *Vratch*, February 3, 1901, Vol. XXII, No. 5), L. A. Finkelstein devotes an extensive paper to the subject of the effect of cinnamylic acid or its salts on tuberculosis. After a thorough review of the subject, quoting *in extenso* the observations of others *pro* and *con*, he reports his own observations, made in the sanitarium for consumptives. In all 20 cases were studied. The history of each is given, but the cardial points, as well as the results of the treatment, are summarized as follows: (1) The ages of the patients varied from 19 to 42, the majority from 20 to 30. (2) One of the

patients was at the time of admission in the first stage of the disease, another in the second. By the "first stage" the author understands a condition in which one or both apices, not below the second rib, are affected, and there is no catarrh. In the "second stage" there are marked changes accompanied by catarrh, but without any signs of destruction of lung-tissue. (3) The number of injections was from 10 to 45. (4) The duration during which the injections were made was 1 to 5½ months. The duration of the observations made prior to the injections was from 10 days to 14½ months. (5) The cough diminished during the injections in 5 patients, in 11 it remained as before, in 4 it became either worse or better. Prior to the injections it diminished in 14, remained stationary in 2, and was either better or worse in 4. (6) The sputum has undergone no change, either in quality or quantity, in 16; in 2 it became less, in 1 more profuse and in 1 lighter in consistency. Prior to the injections it became less in 9, remained stationary in 8, changed in character in 2 and was irregular in 1. (7) The tubercle bacilli remained as before in 13, became less in number in 3 and increased in 4. (8) No special improvement of the subjective symptoms was noticed during the injections. (9) The night-sweats disappeared also before the injections. Only in one case did they disappear during the treatment, while in the other they persisted in spite of it. (10) The weight was reduced in 4; in the others it increased from ¾ to 37¾ pounds. Prior to the treatment it was decreased in 3 and increased from 1½ to 43 pounds in the others. (11) The enlarged lymphatic glands remained as before. In 1 patient with a fistula of a lymphatic gland the opening did not close. (12) In 1 patient with laryngeal tuberculosis an improvement was observed during the injections, but this improvement is to be credited more to the general hygienic and dietetic treatment than to the sodium cinnamylate. A number of similar cases improved in the sanitarium prior to the use of this drug, and many even recovered. (13) The areas of dulness did not diminish during the injections. On the contrary, in 2 cases the tympanitic sound reappeared. (14) In 1 case the breathing became weaker, in 2 it changed from bronchial, and in 1 from weak to amphoric. In 2 it assumed a marked bronchial character, and only in 1 did it become less raspy. In all others the conditions remained the same. (15) Two patients had hemoptysis twice (1 had it twice prior to the injections, the other 4 times). In 1 case hemoptysis occurred once, in the other 5 times prior to the injections, but in neither case was blood found in the sputum during the treatment. (16) The treatment exerted no influence on the temperature. (17) In 1 patient somnolence was observed for from half to one hour after the injection. It thus appears that the results obtained could not be considered either favorable or encouraging. The slight improvement which took place in some of the cases could be very well attributed to general treatment and other favorable conditions under which the patients in sanitaria are placed. [A. R.]

Chronic Myocarditis and Ruptured Compensation.—L. L. Solomon, (*New York Med. Jour.*, Feb. 9, 1901), uses digitoxin instead of digitalin for the reason that it actually dilates the vessels while stimulating the heart. Its action is more prompt and more sure than that of digitalin. It is less liable to the cumulative action and generally takes not more than twenty-four hours to manifest itself. When discontinued its influence will persist from eight to ten days. It has been used as high as 1-40 grain a day. In a dose of 1-80 grain to avoid digestive irritation, it has been used by enema, 1-80 grain in 10 minims of alcohol and 4 ounces of water. This was given three times, to be diminished to once a day. It has been given by the mouth in doses of 1-500 grain or less three times a day with no gastric distress. A solution of digitoxin is liable to precipitate on coming into contact with the secretons of the body, and to avoid this it is recommended to add a little chloroform to the solution. [T. M. T.]

The Medical Treatment of Peptic Ulcer.—F. S. Shattuck, (*Jour. Am. Med. Asso.*, April 13, 1901), divides peptic ulcers into three classes for diagnostic purposes: (1) Those which are entirely latent and present either no symptoms at any time, or first manifest themselves by hemorrhage or perforation; (2) Those with symptoms of indigestion not easily distinguishable from those of indigestion arising from other cause; (3) Those with diagnostic symptoms. In treating the condition he advises the following in the third division, and does not consider the first and second. His plan is to place patient in bed for a period of two weeks and to give nourishment by the rectum, the length of time of the rectal feeding depending upon the ability of the rectum to retain the nourishment. He always gives a large cleansing enema daily and nutrient enema every six hours, the quantity being about six ounces of milk, or milk and egg, but lately he has given as high as a pint of nourishment every six hours. He also gives a small quantity of water by the mouth or into the rectum, or under the skin if the patient complains of thirst. [T. M. T.]

Tropacocaine as an Anesthetic.—Meyers, *Medical News*, April 13, 1901), states that the dose of tropacocaine to be used in an operation lasting an hour or longer is fully five centigrams (5-6 grain.) In more serious operations 0.06 gm. (1 grain) of the salt might be used if a subcutaneous injection of 1-50 of nitroglycerine be given at the same time. It is more than likely that certain individuals have an idiosyncrasy towards tropacocaine. The drug compares with cocain in the following particulars: (1) Tropacocaine is less than half as toxic as cocaine; (2) The depressing action, both on the cardiac motor ganglia and on the cardiac muscle, particularly the latter, is much more than with cocaine; (3) Recovery from its effects is much more rapid; (4) The solution is by far more soluble than that of cocaine. The author uses a solution composed of tropacocaine hydrichlorate, gm. 0.015 (1-4 gr.); sodium chloride, 0.06 gm. (1 gr.); distilled water 10.0 (℥iiss). Each 10 minims will contain one centigram (1-6 grain), and fifty minims will contain 0.05. This drug has been employed by him in spinal anesthesia, in surgery of the urinary system only in such as Bottini's operation, litholapaxy, vesical tumor, primary and recurrent, and has given very satisfactory results. [T. M. T.]

Lavage of the Stomach, as a Therapeutic Agent in the Treatment of Habitual Constipation.—C. H. Spivak, (*Jour. Am. Med. Asso.*, April 13, 1901), advocates lavage in the following conditions: (1) Constipation due to excessive acidity of the stomach; (2) When it is due to gastric atony; (3) Diarrhea resulting from excessive production of mucus in the stomach; (4) Obstruction of the intestines from whatever cause; (5) Habitual constipation. In this last division he found by experiments that a certain percentage of individuals suffering from habitual constipation had spontaneous movements of the bowels the following day after the stomach had been washed for the first time, and that the majority of cases will eventually recover the normal function of their bowels if lavage is used daily for two to three weeks and later at greater intervals. He found that the best results were obtained from using cold water, or hot and cold water alternately, and that the best time to wash out the stomach is an hour before breakfast. [T. M. T.]

Mercury-Ethylenediamine.—This is at present placed on the market only in solution, containing 10 per cent. of mercuric citrate. According to Drs. Krönig and Blumberg, mercury-ethylenediamine in the strength of 3:1,000, made by the addition of 30 grams (1 oz.) of the solution to 970 grams (1 quart) of water, is excellent for the disinfection of the hands. Professor Saenger holds, however, that a concentration of 1:1,000 (2½ dr. of solution to 1 quart of water) is sufficiently strong. Drs. Schenk and Zaufal quoted in *Merck's Archives, April, 1901*, performed a series of experiments upon their hands in order to determine the effect of various methods of rendering them aseptic. Vigorous washing with sand soap was practically useless; after thirty minutes' hard rubbing the enormous number of 122 colonies of bacteria per square Cm. could be counted; in fact, the prolonged rubbing seemed to bring the micro-organisms to the surface in even greater numbers. Even less satisfactory results were obtained by vigorous rubbing with a sterile brush and sterile soap. A series of experiments was also made with the mercurial ethylenediamine solution of Krönig. This consists of 4 Gm. of ethylenediamine, 10 Gm. of citrate of mercury, and 86 Gm. of water. For the hands the solution can be diluted from 1 to 30 up to 1 to 200. The hands were almost invariably perfectly sterilized. They conclude that the most perfect method of sterilizing the hands or skin is to wash for five minutes with sand soap, and then immerse for three minutes in the above-mentioned solution, which should be as hot as can be borne.

The Treatment of Bubo.—Dr. F. Griffith, in the *N. Y. Medical Journal*, LXXIII, No. 7, states, in an elaborate ar-

ticle on the subject, that internal medication is often superfluous, beyond general hygienic measures and keeping the bowels freely open. However, iron, in Blaud's pill or in other form, may be of use. In the early stages abortive measures are indicated. An ice-bag at bedtime or a flaxseed poultice applied to the bubo, combined with a vigorous treatment of the primary source of infection, will prevent further development in about one-third of all cases. The daily application of an ointment like the following does excellent service:

Mercurial Ointment .....
Belladonna Ointment..... .....equal parts
Ichthyol .....

This salve lubricates and softens the tissues. As soon as suppuration is demonstrable by fluctuation the indications are for surgical interfereence. The abscess should be opened and subsequently drained. The interesting question as to whether or not micro-organisms are present in the pus still remains undecided. [T. L. C.]

Ankylostomiasis.—*Indian Medical Magazine, October, 1900.* Neil Campbell gives an acount of the condition as met with in the Andamans. He divides it into three stages: (1) The dyspeptic, (2) the anemic, and (3) the edemic. For the expulsion of the parasite he recommends the following treatment:—The patient should be brought into hospital, and the day prior to treatment should be kept on a low diet, special care being taken to see that no solid food is taken after 2 P. M., though soup or tea may be given. A dose of five grains of calomel is given at bedtime. Early the following morning, if the patient be strong, a dose of castor oil, together with five grains of santonin, may be given, followed in an hour's time by thirty grains of finely powdered thymol, which should be given in water. Three hours afterward a full dose of castor oil should be given, and no food except a little tea or soup should be allowed until the oil has thoroughly acted. Frequently, if the calomel has acted well, only one dose of oil, that after the thymol, need be given. The santonin must not be mixed with the thymol, or an oily mass results; nor must alcoholic stimulants be given, or the thymol might be absorbed. [T. L. C.]

Oil of Eucalyptus in Cholera.—Major Harold Brown, I. M. S., describes the treatment he has adopted in an epidemic of this disease, (*Indian Medical Gazette, October, 1900, p. 387*). Oil of eucalyptus was the only drug employed, and it was given in doses of ten minims every quarter of an hour, and then hourly, in a spoonful of milk. For children the dose of eucalyptus was from one to three drops, and the first effect of the drug was to stop vomiting almost at once, or in a very short time, the effect on the diarrhea being later but still very manifest. Opium was never given. Cramps were treated by friction with dry ginger, and friction of the abdomen and loins with mustard oil was also practiced. During the stage of collapse, warmth to the body and extremities, by means of friction, blankets, hot-water bottles, hot sand, etc., was insisted on, and, later, dry cuping was resorted to when the secretion of urine was suppressed, eucalyptus being given at longer intervals throughout. [T. L. C.]

Cough of Phthisis.—In that severe, obstinate and unconquerable cough of phthisical patients, due to ulceration, which in nervous persons especially comes on with every attempt to talk, eat or drink, Dr. Weissenburg (*Merck's Archives*, April, 1901, recommends highly the following combination:

Dionin	of each
Codeinae Hydrochlor.	gr. iss
Cocainae Hydrochlor.	gr. 1-3
Ammonii Valerianat.	3 ij
Aquae amyg. amar.	3 ij

Fifteen drops on a piece of sugar, every three or four hours.

Quinine in the Treatment of Uterine Conditions.—Dr. P. Dolche states (*Presse Medicale*, 5th January, 1901) that quinine has an important field of usefulness in the treatment of uterine affections. It is very useful in congestive dysmenorrhea, by diminishing the flow of blood to the genital organs, and in dysmenorrhea due to neuralgia of the genital organs. It may also prove useful in amenorrhea, by stimulating the contraction of the uterus and of the utero-ovarian vessels, which would in their turn stimulate the dormant ovulation. In metrorrhagia and menorrhagia not dependent upon any organic disease, it is very effective. The author gives the quinine in largest doses, 8 to 24 grn., and he combines it with digitalis or ergot, as may seem indicated.

Ichthyol Enemata in the Treatment of Dysentery.—Dr. Potilov, in *Les Nouveaux Remedes*, XVII, No. 2, recommends ichthyol enemata in the treatment of dysentery. He uses for each injection 6 drams of ichthyol dissolved in about 27 oz. of water. The patient takes at the start a dose of castor oil and the ichthyol injections are then given every other day. An endeavor must be made to make the liquid reach as high up in the intestine as possible. The pains disappear very rapidly under this treatment, and all other symptoms improve. [T. L. C.]

Resuscitation of persons apparently dead from suffocation or chloroform or ether poisoning by direct massage of the heart. Prus gives the following method.—(*The Medical Press*, Jan. 30, 1901).- Portions of the 3d and 4th ribs, measuring two and one-half inches in length, were removed over the pericardial sac. The heart is then grasped in the hand, introduced through this opening. After the heart has been compressed partly by seizure with the hand and partly by holding it against the back of the sternum, independent contractions begin to occur which subsequently develop into slow, regular heart-beats. In the course of thirty minutes the circulation of the blood appears to to be fairly well established when the first gasping respiration occurs, and in about two and one-half hours after asphyxia it is possible for the patient to take a number of successive respirations. In half an hour more he is able to breathe easy and deep, whereupon the intermittent grasping of the heart, and artificial respiration, which should be practiced at the same time, are left off.—[T. M. T.]

The treatment of the Later Phases of Heart Disease.—Heffron, (*Boston Medical and Surg. Jour.*, Jan. 31, 1901), recommends gymnastic exercise for the heart muscle in combination with or without medicine, the object being to re-establish the lost conpensatory power. At first gentle massage, then passive exercise, later resistent exercises, and lastly voluntary exercises, such as driving, walking and even bicycling on level streets. Oertel recommends hill climbing if carefully carried out. He also advises the carbonated baths of the Brothers Schott as a stimulant to the nerve centers of the skin and to the general circulation. It is well known that this method, combined with gradual exercise, careful diet and hygienic living has accomplished much in persons who are able to carry out this cure. The Nauheim baths can be imitated at home, and with the exercises described, seem to be satisfactory. [T. M. T.]

Milk Diet in Diabetes.—W. Winternitz and A. Strasser (*Centr.-Bl. f. innere Med., XX, 45, 1899*), obtained the following results with milk diet in diabetes. (1) Rigid milk diet in the majority of cases decreased the amount of sugar eliminated in a marked degree, sometimes even after 48 hours; (2) This result was obtained in grave diabetes in young individuals as well as in obese ones, and in diabetes following trauma. Even patients who under strict diet had not had the output of sugar decreased while under treatment at Karlsbad, after a rigid milk diet excreted either no sugar or very little; (3) In albuminuria, nephritis and diabetes the albuminuria also became less after the disappearance of the sugar, in some cases disappearing entirely; (4) In many cases under a rigid milk-diet, the authors observed after the disappearance or diminution of the sugar elimination that acetone made its appearance in the urine and that which was already present, increased; (5) Sometimes the sugar which disappeared under a rigid milk diet again returned when meat was allowed, or when a mixed diet was instituted. Re-establishment of the milk diet again caused the sugar to disappear. (6) Some diabetes were entirely cured by the milk diet and remain so even when kept under a mixed diet. [M. R. D.]

The Therapy of Hemoptysis in Tuberculosis.—A Hecht (*Therapeutische Monatshefte*, 1900, No. 10) has employed Huchard's pills (ergotin, quinin sulphate, pulv. fol. digitalis, extr. hyoscyam., of each 0.1 gm.) in a number of cases of hemoptysis in tuberculosis. In all cases, upon systematic application of the remedy the hemoptysis was checked. Two cases that had withstood the customary remedies were checked after employment of these pills. The author believes that the hemostasis is not to be attributed to the ergotin, but to the quinin reinforced by the digitalis. [M. R. D.

Transitory Glycosuria in a Case of Acute Morphin Poisoning.—E. Adler (*Prager med. Therapeutische Monatschr.*, 1900, No. 28) reports a case of transitory glycosuria in a woman, 20 years of age,, who had taken about 10 cm. of a 5% morphin solution. Examination of the urine showed on the day following the poisoning of 0.7% of grape sugar, of which hardly an appreciable trace was left on the second day. The patient recovered on the third day. Pentoses were not found in the urine. [M. R. D.]

For Bronchial Asthma.—Goldmann (*Wiener med. Wochenschrift*, 1889, No. 43) reports 43 favorable results with Neumeier's asthma powder which consists of strammonium, lobelia, potassium nitrate, potassium iodid and sodium nitrite. There are no injurious manifestations. A teaspoonful of the powder is placed in a saucer, ignited, and the fumes slowly inhaled. The influence of the remedy is a local one, and it has an analgesic effect upon the mucous membrane. [M. R. D.]

Therapy of Fibrinous Rhinitis.—F. Peltesohn (*Therapeutische Monatshefte*, September, 1900) recommends a solution of cyanide of mercury 0, 02 : 50, for dissolving the mebrane. The solution is applied with cotton on a probe and applied alternately to each nostril for one hour at a time. He reports astonishing results. [M. R. D.]

Contribution to the Study of Iodoform Poisoning.—Anschütz (*Beitraege zur klin. Chir.*, Bd. xxviii, H. 1, p. 233) reports a case of iodoform poisoning in a man 30 years of age of a third injection of 100 ccm. of a 10% iodoform glycerin emulsion into a psoas abscess. The symptoms in this case were as follows: Slight vomiting during the first day after the injection, a progressive somnolence beginning on the ninth day, a widely disseminated acne eruption, desquamation of the buccal mucous membrane, crust formation in the nose, agglutination of the eyelids, followed by increase in the reflexes of the lower extremities, and stertorous respiration. Large quantities of iodoform were found in the urine. In spite of the evacuation of the iodoform emulsions by means of saline irrigation, death followed after 2 days. The whole clinical picture presented a grave case of iodoform intoxication which heretofore had only bee observed experimentally upon animals. The author considered the cause of this rare symptom-complex as due to the caseation of both suprarenal capsules, which was substantiated postmortem upon microscopic examination. There were no symptoms of Addison's disease.
[M. R. D.]

Treatment of Acute Mucous and Dysenteriform Colitis by the Sulphate of Soda.—M. Aviragnet (*Annales de Medecine et Chirurgie Infantiles*, January 1, 1901) states that acute colitis constitutes a clinical type which is distinct from gastroenteritis. Acute colitis may be primary or secondary. In the latter case it succeeds a gastro enteritis or appears in the course of one of the infectious diseases. The pathology of colitis is identical with that of gastroenteritis. Colitis may be divided into the gangrenous form with glairy or mucous secretions; and a second variety, the dysenteriform. These may appear as a mild type with fever, or a severe type with the advent of the algid state. The symptoms of the second variety are akin to true dysentery. The pathologic changes occurring in dysentery, however, are more destructive. Regarding, as Aviragnet does, that the two dysenteric conditions are similarly caused, he treats them identically. His method is to place the patient at rest in bed; to relieve the abdominal pain by cataplasms or hot or cold applications. He disbelieves in the use of lavage of the large intestine, arguing that distension of the inflamed bowel augments the pains, and possibly the inflammatory process. He diminishes the rectal tenesmus with small injections of weak solutions of laudanum, and advises this treatment rather than suppositories. To combat the inflammatory process, he discusses the use of injections of ipecac, borax, hyposulphite of soda, and various suppositories. He believes these means should be rejected in the acute form of colitis, because they are insufficient, save in very benign cases, and because they add to the irritability of the bowel, and may increase the inflammation and pain. He discusses the administration of calomel and ipecac by the mouth and then takes up the treatment with sulphate of soda, from the use of which he claims remarkable curative results. He prescribes 10 to 15 grams the first day (administered in a glass of sweetened water). This dose is slightly aperient, and especially useful when stomach irritability is pronounced. Small doses are given the day following. For example, to a child of from 12 to 14 months, 5 grams. The dose may be varied, and the administration continued for several days. The blood rapidly disappears from the stools, the rectal tenesmus disappears, and diarrhea soon ceases. The warm bath may be used as a valuable adjuvant to this treatment. He does not claim the method of treatment a new one, but wants to emphasize its utility.[T.L.C.]

Treatment of Laryngeal Tuberculosis by Intratracheal Injection of Iodoform in Ether.—L. Vacher (*Semaine Medicale*, December 5, 1900) for some time has been using with success in the treatment of laryngeal tuberculosis an intratracheal injection of the following mixture: Ether containing iodoform to saturation, 100 gm.; guaiacol, 5 gm.; eucalyptol, 2 gm.: menthol, 1 gm. Two cubic centimeters or less is injected into the tracheal tissue with none of the exzpected discomfort. On the contrary, there is simply a quick sensation of heat, scarcely painful, and no spasm following, which disappears after a few strong respirations. The breath for some hours has perceptibly the odor of iodoform and of guaiacol. With this treatment followed judiciously there occurs a lessening of the laryngeal distress and a general improvement in the patient's health. After each injection a laryngoscopical examination reveals the glottis surrounded by tissue filled with the solution of iodoform.

The Treatment of Bronchial Affections by the Recumbent Position.—O. Jacobson (*Berliner Klinische Wochenschrift*, October 8, 1900. 37. Jahr., No. 41) states that the first indication in the treatment of all bronchial processes is the removal of the pathologic exudate eliminated by the bronchi. He believes that expectorants are followed by the reproduction of the exudate. Gravity and altered alveolar expiratory pressure play a minor role. The therapeutic effect desired is not only to alleviate the expectorant but also to regulate it. As soon as the secretion has reached such a level that it encroaches upon the area of still sensitive mucous membrane, expectoration results. This accounts for elimination of the exudate by expectoration when the patient arises in the morning, who, during the sleep, had the exudate evenly distributed through the dilated bronchi with the admission of air into the peripheral portions of various bronchial twigs and thence into the alveoli. The procedure mentioned in the title is indicated in chronic bronchial blennorrhea in consequence of a diffuse, small, cylindric bronchiectasis, and can also be fruitful of good results in chronic abscesses of the lungs and sacculated bronchiectasis. Contraindications are all acute bronchial affections and exceptionally large abscess cavities. [M. R. D.]

Antitoxin by the Alimentary Tract.—W. Campbell McDonell, instead of the usual method of administering antitoxins in Diphtheria has employed it by the mouth or by the rectum, and claims satisfactory results from this method. [T. L. C.]

The Utility of Treating Nasal Affections in Patients Suffering from Cataract.—Dr. C. Ziem, of Danzig, has obtained appreciable amelioration of visual acuity by irrigating the nose and maxillary sinus with a physiological solution of sodium chloride, or by the application of a blister over the mastoid process, or by a combination of these two methods. The rationale of this method is based upon its favorable influence upon the intra-ocular circulation. Ziem has frequently found that patients with beginning cataract are frequently subjects of rhinitis, and he believes that the cure of the nasal condition will frequently arrest the development of cataract. [T. L. C.]

The Treatment of Typhoid Fever by Ichthyol Baths.—Dr. R Pollaco, of Milan, advocates the following method of treatment for typhoid fever. To water at the temperature of 28°C, there are dissolved 60 gms. of the sulpho-ichthylate of ammonium. The patient is immersed in this for from 5 to 10 minutes, and the temperature usually falls from 4 to 6 degrees. It is especially useful in the adynamic forms of typhoid with the tendency of pulmonary congestion. A restful sleep usually follows the bath. Pollaco has found that the temperature is easily controlled by this means, and it is seldom that more than 6 baths are necessary. Usually the improvement is marked after the second bath. [T. L. C.]

Selections.

Dr. Edward Stapleton in an article upon the **Light Treatment of Lupus** in the *Dublin Journal of Medical Sciences* for March, 1901, thus describes the method as applied in the London Hospital:

"The light employed at the London Hospital is derived from two arc lamps of 18,000 candle power. Radiating downward from each of these lamps are four tubes, which by an arrangement of lenses concentrate the rays of light on the patients, who are lying on tables underneath. The lenses are of quartz, this material allowing the rays of shortest wave length to pass through; and between the lenses a stream of water constantly flows, which acts not only as an absorbent of the red rays, but also as a cooling medium through which the light must pass. By means of a screw adjustment the rays can be accurately focussed on the affected part. As the light is still, however, too hot to be applied without hurting the patient, the skin is kept cool by a little apparatus applied over the part to be treated, consisting of a plate of quartz and a convex lens of the same substance, framed together in a brass ring. Through this chamber a second stream of water is kept running, and by this means the skin can stand the action of the strongest light. Meanwhile pressure is kept up to render the skin anemic, thus enabling the violet and ultra-violet rays to penetrate more easily. In this manner an area about the size of a sixpence is treated for an hour every day. To obtain the full benefit of the light the affected area must be a plane surface, on which the rays can be accurately focussed."

Treatment of Malaria.—Patrick Manson, who is with good reason regarded as one of the formost authorities on malaria, writes in *The Practitioner* of March, 1901, as follows: "Quinine is the only reliable drug in malaria. Properly administered it is thoroughly reliable. Necessary conditions for success are that it be given in such a way that it is absorbed and that the dose be adequate. Euquinine—a derivative of quinine—is at present on its trial. So far, it seems to be equally efficient, and it has the further merit of being tasteless; its greatest drawback to employment on a large scale is its expense. For an ordinary intermittent fever the dose of quinine may be ten grains, given when the sweating stage commences, followed by five grains every six or eight hours for a week, and, with the view of preventing relapse, five grains three times every fifth, sixth, or seventh day for two or three months. For bilious remittent the same treatment applies, care being taken that the use of the drug be persisted in so long as fever continues. It is a usual and, I believe, a good practice to give a full dose of calomel, followed by a saline cathartic at the outset of the treatment of this type of malarial fever. Quinine is said to act most effectively when the dose is so timed as to exercise its greatest effect while the spores of the parasite are free in the liquor sanguinis: that is to say, it is most effective when given an hour or thereby before the expected paroxysm. This may be true, but the fact is of very little practical value, for in an ordinary interimttent to give the drug at this time is to aggravate the headache which generally accompanies the fever, and, in the case of bilious remittents, or of pernicious cases, it would be a grave error to await the doubtful occurrence of a remission. In serious cases it is also a grave error in practice to give quinine in pill, capsule, or tabloid form. It should be given either in solution by the stomach or rectum, or, better, hypodermically. Pills, tabloids, and the like are apt to remain in the stomach in these cases undissolved. In grave cases, and where a rapid and certain effect is demanded, it is best to give the drug hypodermically, or, rather, intramuscularly. A soluble salt, such as the bihydrochlorate, should be selected, or, where this is not available, the sulphate dissolved with the aid of half its weight of tartaric acid. The needle of the syringe should be thrust deep into a muscle before injection is made. Intramuscular injection is not much less painful than subcutaneous injection. but it is less likely to be followed by severe inflammation and abscess. Needle, syringe, and solution should be rendered thoroughly aseptic by boiling. Strange to say, whereas hypodermic injection of morphia has rarely been followed by tetanus, that of quinine at one time, in pre-aseptic days, bore an evil reputation in this respect. If fever does not quickly subside after the administration of the drug in the doses mentioned and diagnosis is assured, there must be no hesitation in doubling or even still further increasing the dose. It may be safely asserted that any intermittent fever which resists quinine for three or four days is not malarial. Arsenic, though of value as a blood restorer after a malarial attack, has no power over the parasite, at all events when given in safe doses. Methylene blue in three or four grain doses appears to have some virtue, and may be of service in those cases in which quinine. owing to some peculiar idiosyncrasy, cannot be taken. Many other drugs have been recommended for malaria from time to time, especially by those interested in their sale, but we have no reliable evidence that they possess anti-malarial virtues in any way comparable to the cinchona alkaloid."

Formulae.

TREATMENT OF TUBERCULOSIS.

IODOL IN TUBERCULOSIS.

T. M. Tyson, (*Jour. of Tuberculosis*, Jan., 1901), recommends the following in the incipient stage of phthisis:

℞

Iodol	gr. xx
Ol. Olivae	f. ʒ i

Mix.—Sig. Half a drachm rubbed in on various parts of the body three times a day, to be gradually increased until a half ounce is used. No other medicine is taken except 1-25 grain of strychnine three times a day.

NUTRIENT ENEMATA OF COD LIVER OIL IN TUBERTUBERCULOSIS.

Tenner, *Therapeutische Monatshefte*, June 1, 1900), prepares the enemata as follows: 250 c.c. to 50 c.c. water in which is dissolved pancreatin 5 gm., inspissated oxgall 0.5 gm., sodium chloride 1.5 gm. The whole is digested for two hours and three drops ethereal oil of eucalyptus are added. Of this amount 60 to 100 c.c. are injected each evening. This can be kept up for an indefinite period.

COUGH IN PHTHISIS.

J. R. L. Daly, *N. Y. Med. Jour.*, Jan., 1901), recommends for persistent hard dry cough with little or no mucus the following combination:

℞

Camphorae	. gr. ij
Heroin.	gr. 1-12
Creasoti	gr. i

This is combined in a proper vehicle into pills and given until the necessary relief is produced. It will also stimulate the appetite and prevent the vomiting which is due to the cough.

FOR NIGHT SWEATS OF TUBERCULOSIS.

A. Robin, (*Med. Record*), suggests the following powder, to be used locally:

℞

Acidi salicylici	
Acidi boraci	āā 3i
Amyli	3 iv
Pulv. talci	ʒiss

M. et. Sig. Use is a dusting powder locally.

TREATMENT OF PNEUMONIA.

Porter, (*Phila. Med. Jour.*), following F. P. Henry, Clement Penrose and others, says immediately after venesection, which is advised as soon as the diagnosis is established, subcutaneous injections of salt solution should be administered. From 8 to 12 ounces of blood are usually removed. The salt solution is prepared according to Jenning's formula as follows:

℞

Sodii chloridi	gr. xxx
Potassii chloratis	
Sodii sulphatis	āā 3 i
Sodii phosphatis	gr. xi
Sodii carbonatis	3 i
Aq. destil. d. s. ad fac.	f. ʒ vi

M. Sig. Use one part of this solution to sixty of distilled water subcutaneously.

TREATMENT OF DIPHTHERIA.

J. Weichselbaum, (*Merck's Archives*), recommends, beginning with a mercurial purge, the following prescription internally:

℞

Hydrarg. iodidi rubri	gr. i
Potassii iodidi	gr. iv
Aquae	f. ʒ i
Solve et adde.	
Syr. acidi hydriodic q. s. a. d.	f. ʒ iv

S. 5 to 10 drops on tongue every twenty minutes night and day.

For use in an atomizer locally to the fauces:

℞

Hydrogenii peroxidi	f. ʒ i
Aquae	f. ʒ iij

M. et S. Use as a spray every hour or two, also gargle if patient is old enough. He also advises internally.

℞

Quininae sulphatis	gr. xlviii
Ext. glycyrrhizae fluid.	f. ʒ i
Aq. cinnamomi q. s., ad.	f. ʒ℥v

M. et S. Shake and take a teaspoonful every two hours during night and day.

DERMATOLOGY.

IMPETIGO CONTAGIOSA.

J. F. Schamberg, (*Internat. Med. Mag.*, April 1, 1901), recommends the following after the crusts have been removed:

℞

Hydrargyri bichloridi	gr. j
Glycerini	f. ʒ j
Spt. vini recti	f. ʒ j
Aquae q. s., ad.	f. ʒ iv

Apply frequently during the day with nightly applications of

℞

Hydrargyri ammoniati	gr. x ʒ xv
Pulv. amyli	
Pulv. zinci oxidi āā	ʒij
Petrolat.	ʒss

He also recommends for lesions on the face:

℞

Recorcini	grs. xv
Lanolin	
Petrolati āā	ʒ ss

or a lotion or recorcin.

℞

Resorcini	
Acidi boraci āā	grs. xl
Glycerini	f.ʒj
Alcoholis	f.ʒss
Aguae q. s., ad.	f. ʒ iv

If the patches are under cover they can be painted twice a day with a 10 to 20 grain solution of nitrate of silver.

LOCAL APPLICATION OF TURPENTINE FOR NEURITIS.

Mircoli, (*Clinica medica della R. Univ. di Genova; Arte medica*' April 7, 1901), advises the use of frictions of turpentine in neuritis due to cold, and especially in sciatica. He gives the following prescription:

℞

Venetian turpentine	30 parts
Dissolve in	
Oil of turpentine	6 "
And add	
Olive oil	50 "

The action of the resin adhering to the skin continues after the cessasion of the frictions.

TREATMENT OF LUMBAGO.

Masse, (*New York Medical Jour.*, Feb. 23, 1901, recommends the following liniment applied to the back with brisk friction:

℞

Lime water	60 parts
Olive oil	60 "
Chloral	30 "

TREATMENT OF MOSQUITO BITES.

M. Manquat, (*Bulletin general de therapeutique*, Nov. 15, 1900; *Archives de medecine et de pharmacie militaires*, April, 1901), prescribes tincture of iodine and formaldehyde as the most serviceable mendicaments, while he also thinks menthol is deserving of consideration. The tincture of iodine, if applied freely, to the bite of a mosquito (not later than two hours after), causes the annoyance to disappear in from ten to twenty minutes. He also recommends for the face, tender surfaces, and very young children the following prescription:

℞

Formaldehyde, 40 per cent. of sol.	5 parts
Alcohol:	
Water : of each	10 "

Mix. It should be applied for only a short period and in repeated layers, without reaching the smarting point, so as to assure a rapid evaporation of the active principle, and avoid any cautic action.

FOR DEEP-SEATED INFLAMMATION.

W. T. Slevin, (*New York Medical Jour.*, Mar. 9, 1901), recommends the following combination of ichthyol and lead iodide to be rubbed thoroughly into the affected part.

℞

Ichthyol, plumb. iodidi āā	gr. xlv
Ammonii chloridi	gr. x
Petrolati ad faciend.	ʒ i

FOR DIARRHEA IN CHILDREN.

Recommended by Hirsh.

℞

Argenti nitratis	gr. i
Sacchari albi	ʒ ij
Aquae destillatae	f. ʒ ij

Fiat mistura.

Sig. Take a teaspoonful every two hours. For newly weaned infants.

FOR PERSPIRING FEET.

For the above condition it has been suggested (*Jour. Amer. Med. Asso.*, Apr. 20, 1901), to wear low shoes, woolen stockings, and dust the feet twice a day with iodol, washing them with the following mixture:

℞

Liq. plumbi diacetat.	f. ʒ ii
Acidi carbol.	f. ʒ ii
Aq. q. s. ad	f. ʒ ii

M. Sig. One tablespoonful to be mixed with a pint of warm water and wash the feet every morning and evening and dry with a soft towel.

TREATMENT OF HAY FEVER.

C. C. Royce, (*Phila. Med. Jour.*, April 6, 1901), gives the following formulae:

℞

Cocainae pulv.	gr. ij
Supraren. extr.	ʒ iij
Amyli q. s. ad	ʒ i

Mix. Sig. Insufflate ad libitum.

In conjunction with the above during the autumn he advises:

℞

Heroin	gr. i
Atropini sulph.	gr. 1-25
Caffeinae cit rat.	gr. xv
Sodii salicylat.	gr. lxxv

Mix. Ft. Cap. No. xv. Take one three times a day.

The suprarenal capsule applied to the mucous membrane of the nose is likely to produce sneezing and pain, but this the patient will become accustomed to when he finds the great relief resulting.

AMENORRHEA.

Bloom (*Gazette hebdomadaire de Med. et de Chir.*, April 1, 1900) recommends the following for amenorrhea:

Acid. oxal.	0.01 gram.
Ferr. peptonat.	0.1
Mangan. lact.	0.1.
Extract. colocynth. comp.	0.03

M. Sig.—One powder, three times daily, after meals.

Book Notices.

BOOK NOTICES. Memoranda of Poisons.—By Thomas Hawkes Tanner, M. D., F. L. S. Eighth Revised Edition by Henry Leffmann, A. M., M. D., Professor of Chemistry in the Woman's Medical College of Pennsylvania, etc. 175pp. Philadelphia; P. Blakiston's Son & Co., 1901, (price 75 cents).

This well known little book on toxicology has been revised for the eighth time. Without materially increasing its size modern chemical nomenclature has been inserted, some obsolete portions of the old text have been omitted and the chemistry of poisonous food products brought up to date. The book is divided into chapters on diagnosis, duties of practitioner, treatment, detection of poisons. The classification is well selected; corrosives, irritants, neurotics. Each poison is treated individually as to diagnosis, detection and treatment. Only one criticism can be made, and that is the absence of a systematic attempt to estimate minimum fatal doses, maximum dose followed by recovery, usual fatal dose, usual date of fatal termination. As the work is intended for the busy practitioner rather than the medico-legal expert the English cases, given in the original, have by Dr. Leffman ben omitted. In a word this is a thoroughly practical little work which ought to find a place in every physician's library. [W. S.]

A Handbook of Materia Medica, Pharmacy and Therapeutics, Including the Physiological Action of Drugs, the Special Therapeutics of Disease, Official and Practical Pharmacy, and Minute Directions for Prescription Writing; by Sam'l O. Potter, A. M., M. D., M. R. C. P., London, formerly Professor of the Principles and Practice of Medicine in the Cooper Medical College, San Francisco, Cal.; Late Major and Brigade Surgeon of Volunteers, U. S. Army, etc., etc., Eighth Edition, Revised and Enlarged. Philadelphia; P. Blakiston's Son & Co. Price in cloth, $5.00 net.

In thirteen years this work has passed through seven editions and this, the eighth, has been carefully revised. Many chapters have been rewritten completely and much new material has been added. The stamp of professional approval attests the value of the book and it contains many features of practical excellence which can be found in no one work in the same field with which we are familiar.

The major subject has been handled with ability and judgment, and every page bears evidence of the great amount of labor which the author has bestowed upon the work. His style is extremely good, and his matter is graphically and entertainingly set forth. There is a commendable fulness of treatment in the discussion of the therapeutic application of drugs, and the descriptions of the physiological action seem in accord with the best authorities. Upon certain points we could wish to have had the author's personal opinion, as to the value of a quoted fact, rather than the bald quotation without the weight of the author's authority. For instance, under the treatment of cataract it is stated that: "Phosphorus with oil by frictions to the forehead and instillations of the same into the eye may cause absorption of the lens or capsule." This is quoted from Waring. We might ask: does the profession concede this action, or does the author approve of it; and, if not, why is it given the importance of mention? The Toxins and Antitoxins have been adequately discussed, and in very few works of this character are these subjects handled more ably. The use of Tuberculin upon human beings as a diagnostic measure is not approved by the author, but the work which has been done lately in this field has caused many conservative practitioners who formerly held this opinion,to conclude that the employment is harmless and of great diagnostic value in many cases. Gelatin is not mentioned as a hemostatic; nor has the author given space to the therapeutic value of the yeasts. The subject of Organo-therapy has been handled somewhat more briefly than its importance would seem to demand; and in the article upon adrenal extract no mention is made of its valuable hemostatic properties. The use of methylene blue in gonorrhea is not mentioned. One other point and our criticism, adverse only upon very minor points is done. Throughout the work the names of firms, and of the same firm a number of times, appear in the discussion of certain preparations. While this is a question of taste largely, we do not believe the text in any instance would have suffered, or injustice been done had the names been omitted. This work as a whole is one of uniform excellence and it will continue deservedly to be a most welcome and helpful book on the practitioner's shelves. [T. L. C.]

Merck's 1901 Manual of the Materia Medica, a Ready Reference Pocket Book for the Practicing Physician and Surgeon, etc., etc.; price $1.00. **Merck & Co.,** New York and Chicago.

The mass of material which this little manual comprehends makes it a valuable hand-book for physicians. The formulae given are excellent examples of clean pharmacy and the compilation seems to have been judiciously made. The proper method of prescribing remedies is an art which requires care and study; and the elegance, as well as the utility, of any compound ordered, should be considered by the physician in prescribing for his patients. In the article on "Poisoning and its Treatment" there is a most welcome addition to the manual for 1901. An adequate description is given of the quantities of an antidote to be employed, as well as the rationale of its action. [T.L. C.]

A System of Physiologic Therapeutics, edited by Solomon Solis Cohen, A. M., M. D. Volume I, Electrotherapy, by George W. Jacoby. Published by P. Blakiston's Son & Co., Philadelphia, 1901.

The issue of this volume may be said to inaugurate a new departure in medical publishing. "Therapeutics without drugs" is timely. There can be no doubt there is still too much prescription of drugs, though there has been much improvement in this respect of late years, offset somewhat by the enormous productions of therapeutic agents by the manufacturers, which being placed on physician's tables, suggest their use when—occasionally, at least—no prescriptions would be made. These are days in which it may be said that prescribing is made easy.

On the other hand, few persons realize how extensive the field of therapeutics without drugs is. A list of the subjects to be treated in this series gives really only a partial idea. They include electrotherapy, climatology and health resorts, including mineral springs, prophylaxis, personal hygiene, nursing and care of the sick, dietotherapy, mechanotherapy, rest, mental therapeutics, suggestion, hydrotherapy, thermotherapy, phototherapy, balneology, pneumatotherapy and inhalation methods, serotherapy, organotherapy, bloodletting, etc., principles of therapeutics, indexes and digest.

Dr. Cohen introduces the series in a rather lengthy but readable "foreword."

Volume I, the one before us, includes electrotherapy by George W. Jacoby, covering in Part I, Electrophysics, and in Part II, Apparatus required for the therapeutic and diagnostic use of electricity including Roentgen rays. The subject is fully covered in a lucid and attractive manner, beginning with fundamental principles, and concluding with apparatus for the production of skiagrams and for the transilluminations of the body by means of the Röntgen rays. We know of no work which treats it so thoroughly and satisfactorily. The many changes of apparatus and method necessitated by modern advances in this line of treatment make it necessary to have a new book every two or three years, and this, so far as we know, is not only the latest, but the best. The beautiful typography and general attractiveness of the book stimulate the interest of the reader. [J. T.]

Books Received.

The "Therapeutic Monthly" acknowledges the receipt of the following publications. Reviews of those bearing on this subject will appear shortly in the journal.

Consumption, Pneumonia and Their Allies.—By Thomas J. Mays, A. M., M. D. 8vo., 539 pages. E. B. Treat & Co., New York. 1901.

The International Medical Annual. A Year-Book of

Treatment and Practitioners' Index. 8vo. 682 pages. E. B. Treat & Co., New York. 1901.

Sexual Debility in Man. By F. R. Strugis, M. D. 8vo.. 432 pages. E. B. Treat & Co., New York. 1900.

Physical Diagnosis in Obstetrics. By Edward A. Ayers, M. D. 8vo., 283 pages. E. B. Treat & Co., New York. 1901.

Textbook of Gynecology. By Charles A. L. Reed, A. M., M. D. 8vo., 900 pages. D. Appleton & Co., New York. 1901.

Self-Examinations for Medical Students. P. Blakiston's Son & Co., Philadelphia. 1901.

MEETING OF THE AMERICAN THERAPEUTIC SOCIETY.

(Reported by Dr. T. L. Coley).—The second annual meeting of the society was held in Washington, on Tuesday morning, May 7, at 10 o'clock. In the absence of Dr. C. H. Wood, who was prevented from attending on account of illness, the meeting was called to order by the vice-president, R. W. Wilcox, of New York. Dr. Robert Reyburn, chairman of the Judicial Council, delivered the address of welcome. Dr. T. E. Satterthwaite, of New York, responded on behalf of the visiting members. The reports of the secretary and treasurer followed. Dr. George C. Ober, of Washington, delivered a memorial address upon the late Dr. Samuel C. Busey, of Washington. The morning session was then adjourned. The Judicial Council met at 12 o'clock. The afternoon session convened at 2 o'clock and the president's address, "Reviewing the Progress of Therapeutics for the Preceding Twelve Months," was delivered by Dr. R. W. Wilcox. A business meeting behind closed doors followed. In the evening the District Therapeutic Society gave a reception at "The Cochran." At the morning session of May 8th, Francis G. Morgan, M. D., of Washington, read a paper on "Suggestions Concerning the Use of the Metric System in Prescription Writing," and an interesting discussion followed. Dr. F. E. Stewart, of New York, read a paper on "The Relation of the Pharmacist to the Physician, and the Relation of Pharmacy to Materia Medica and Drug Therapeutics." This paper was of especial interest on account of Dr. Stewart's well-known advocacy of the idea for the establishment of a National Bureau of Materia Medica. Dr. Stewart called attention to the necessity of regulating the papers to be read before the society in such a manner that it would be impossible to permit commercial interests to assume control or allow the society to be used for advertising purposes. On the other hand, it should be permissible for the results of all truly scientific investigations upon pharmacology to be submitted to the society, but care must be taken that no drugs are discussed under their copyright names but under their chemical designations. He made an urgent plea for the establishment of a National Bureau of the Materia Medica, and desired that the American Therapeutic Society should be known as strongly advocating this measure. The matter was referred for favorable consideration to the Judicial Council. Dr. Robert Reyburn, of Washington, read a paper upon "The Inertness of Petroleum Compounds When Given Medicinally." The good effects of petroleum when obtained, the writer believed to be due to its demulcent and lubricating qualities. It also aids general absorption by increasing peristalsis, but the drug is not absorbed. Dr. Albert C. Barnes, of Philadelphia, stated that it is well known that petroleum is not absorbed in the gastro-intestinal tract, but a remedy may have the most pronounced physiological effects purely upon account of its mechanical properties. He quoted Dr. Robinson, of Philadelphia, who had treated over 50 selected cases in which nutrition, digestion and body weight were impaired and the purest oil administered for periods of several months. There was in every instance increase in weight and improvement in health. The fact that petroleum passes through the intestine in the original form and that it has been proven to be a solvent of many remedies administered for their antiseptic and astringent influence indicate a useful field for petroleum as a vehicle. In closing Dr. Reyburn expressed his conviction that the petroleum was in no sense a substitute for cod liver oil. At the afternoon session Dr. T. E. Satterthwaite, of New York, discussed "The Therapeutics of Chronic Heart Diseases and their Complications." He placed especial stress upon the fact that the condition of the cardiac muscle and the cardiovascular system generally was far more important than the precise valvular lesion, and he placed more dependence upon exercise alternating with periods of rest and upon the bath treatment, with strychnia and heart tonics given only as indicated, than upon the total rest in the treatment of these conditions. Eli H. Long, M. D., of Buffalo, contributed a paper upon the "Principles of Cardiac Therapeutics in Recent Valvular Disease." On account of the absence of Dr. Long, the paper was read by the Secretary. J. N. Hall, M. D., of Denver, read "A Report of Two Cases of Aneurysm Treated by Wiring and Electrolysis." These cases illustrated the great benefits to be derived from this method when gelatin and other treatment have proven unavailing, and the location of the aneurysm is suitable for the operation. In the evening a banquet was served at "The Cochran." At the morning session of May 9th, Francis H. Miner, M. D., of Washington, discussed "Hypnotism; a Practical Demonstration of its Therapeutic Value." Dr. Miner exhibited a patient whom he could hypnotize very readily, and who was extremely susceptible to post-hypnotic suggestion. He had been an inveterate smoker, and had been cured by post-hypnotic suggestion. At this point in the proceedings a discussion arose as to the advisability of permitting the next paper on the program, "The Therapeutic Use of Chlorotone," to be read under that title. Dr. Stewart remarked that the drug is covered by a patent, and the right to the use of the name chlorotone is limited to one firm of manufacturers. Dr. Barnes, of Philadelphia, believed that the attitude of the physician toward remedies covered by patent, copyright or fanciful name should be unequivocally decided at this meeting. If the society is to be made a place of discussion for patented remedies it will soon lose its usefulness as a scientific body. Dr. Barnes stated that this drug is not a new product. It was first produced in Germany by Willgerodt in 1888 and scientifically investigated by Kossak and Rudolf, and, as Eichengrün states, is shown to be dangerous as an internal remedy because of its strong depressing influence upon blood pressure. The product has been sold for years in Germany under the name of Aneson. Dr. Barnes therefore moved; "that any therapeutic agent offered for discussion before the society should be discussed under its chemical name, and not under its fanciful patented or copyrighted commercial name." This motion was unanimously passed by the Society. Dr. Wilcox therefore instructed Dr. Houghton to discuss the preparation under the name Acetone-Chloroform, which is its chemical name. Dr. E. M. Houghton, of Detroit, then read a paper on "The Therapeutic Use of Acetone-Chloroform. This drug, he declared, was of value as a local anesthetic, a hypnotic and an antiseptic, and from his studies he believed that it was perfectly safe and adapted to general employment. At the afternoon session the following officers were elected: President, Reynold W. Wilcox, M. D., New York, N. Y.; first vice-president, Howard H. Barker, M. D., Washington, D. C.; second vice-president, Eli H. Long, M. D., Buffalo, N. Y.; third vice-president, Leon L. Solomon, Louisville, Ky.; secretary, Noble P. Barnes, M. D., Washington, D. C.; recorder, William M. Spriggs, M. D., Washington, D. C.; Treasurer, John S. McClain, M. D., Washington, D. C.; Curator, Dr. George C. Ober, of Washington. Dr. Leon L. Solomon, of Buffalo, read the final paper of the meeting, "The Therapeutics of Alcohol."

A committee was appointed to investigate the plan of establishing a Bureau of the Materia Medica, with Dr. F. E. Stewart as chairman. A committee was also appointed to investigate the plan of establishing a Psycho-Physical Laboratory under the control of the Department of the Interior. The Society adjourned to meet in New York, the second Tuesday of May, 1902.

Labial Eczema from the Use of Salol.—Garnier, (*Journal de Medecine, Art. 18757*, reports the case of a young man who for four months suffered from an annoying eczema of the lips, and who finally secured prompt relief by giving up the use of a tooth powder known as odol said to contain about 20 per cent. of salol. A fact showing his idiosyncrasy for the drug it cited. In the summer preceding the attack he had dusted salol into his shoes to destroy odor, and shortly after an eczematous erythema showed itself upon the feet, extending to above the ankles. This persisted until the dusting powder was given up and these shoes were no longer worn. [T. L. C.]

Therapeutic Monthly

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A Menace to Medical Science.—We believe that the publication in medical journals of papers which treat of materia medica products controlled by trade interests should be discouraged, because such control tends to limit the free diffusion of knowledge concerning such products.

For example, if quinin had been introduced as a controlled product, it would have been but natural for the producer to use every endeavor to enlarge upon its merits as a therapeutic agent by florid statements concerning its virtues, and by suppressing knowledge of its untoward effects and limitations. Under such conditions authors of papers on quinin, publishers of journals admitting such papers, investigators and teachers, would have all been placed in a most unfortunate position. By advocating the use of the drug, they would have been open to the charge of being paid advocates of the producer; or, on the other hand, by condemning it, they would have been in danger of the charge of prejudice or even threatened with libel suits. Therefore, before we are free to discuss materia medica products in scientific circles, we must be assured that such products are open to science and to commerce. In other words, we must know that all manufacturers are at liberty to make and sell quinin before we are free to discuss quinin as a therapeutic agent. Consequently, when a paper is offered to a medical society for discussion, or to a medical journal for publication, the person having charge of such matters should find out whether these requirements have been complied with before admitting it.

The protection of capital invested by manufacturers in original research and plants for manufacturers in original research and plants for manufacture may be secured by patents on processes and apparatus for manufacture, but control over the products obtained by secrecy, by patents on the products themselves, or by registering as trade marks names intended to be used as the titles of products, is certainly dangerous to science, to the interest of those engaged in the practice of the arts of pharmacy and drug therapeutics, and to the public welfare. For example, patents on processes for making quinine, chloroform, antitoxin, and other materia medica products, may be unobjectionable; but monopolies of such products by commercial houses, no matter how obtained, are a menace to science. Yet this is the kind of control which some manufacturers are now endeavoring to secure over the newer materia medica.

On account of the fact that, under the system of jurisprudence pertaining to this country, the burden of proof in cases of alleged infringement of patents is thrown on the defense, we are willing to suggest the advisability of limiting the use of the name of the product of a new process in such manner as to prevent other manufacturers using it until the patent on the process expires. For example, we would favor limiting the name phenacetin to the product of the Bayer process, but the process for making para-acet-phenetiden itself should be left open to competition so that the inventors of improved processes might be permitted to introduce new and cheaper methods of preparing it. And we would go even further be made to pay royalties to the original inventor who pointed out the way. For it is important that honest commercial interests should be protected and invention encouraged, but it is far more important that the interests of the sick should be conserved.

The Toxicology of Tobacco-smoke.—A state of confusion appears to exist as to the ingredients of tobacco-smoke to which chronic nicotinism may be correctly attributed. Since Zulinski (Ueber den Einfluss des Tabakrauchens auf den Thierischen und Menschlichen Organismus. *Przeglad Lekarski*, 1884; *Deutsche Medicinal-Zeitg.*, 1884) showed that even if tobacco-smoke were deprived of its nicotine, it nevertheless produced symptoms resembling those manifested before the removal of the nicotine, considerable attention has been given to the detection of other ingredients. An examination of the literature on the subject shows that the following substances have already been detected in tobacco-smoke: pyridine, picoline, lutidine, collidine, parvoline, coridine, rubidine, viridine, nicotianine, carbon monoxide, carbonic acid, water, acetic acid, formic

acid, butyric acid, valerianic acid, hydrocyanic acid, hydrogen sulphide, carbonate of ammonium, acetate of ammonium, chloride of ammonium, nitrogen, cyanide of ammonium, anilin, carbolic acid and soot. In a cigar there are six areas with which the tobacco-smoke comes in contact before it reaches the mouth of the smoker: first, the fully formed ash; second, the zone of combustion; third, the charred materials; fourth, the area of transition from the charred materials to the tobacco; fifth, the cigar proper, and sixth, the area impregnated with moisture when the cigar is placed directly between the smoker's lips. The smoke itself emanates from the area where the tobacco begins to char. If the charring takes place under favorable circumstances, and especially with the access of sufficient oxygen, the aromatic principles of tobacco will be produced in great quantities. During the course of smoking, however, the smoke that is drawn through the cigar deposits the volatile products of distillation at the proximal side of the area that is just beginning to char, and consequently markedly influences the odor of the smoke. Furthermore, if the end of the cigar becomes permeated with considerable moisture from the mouth of the smoker, nicotine, as well as other products, impregnate the saliva. The power of combustion of the tobacco is lessened the more it is impregnated with these products of distillation. It would appear that during the combustion of a cigar less air gained access to the area of combustion than to the tobacco in a pipe, which affords by far a larger surface than a cigar. But this is not the case, for a cigar which can be smoked with ease and comfort, if broken up and placed in a pipe, cannot be enjoyed with the same amount of ease. Dudley (*Medical News*, vol. 53, September 16, 1888, pp. 286) claimed that carbon monoxide is the most poisonous constituent of tobacco-smoke, and arises from insufficient combustion. Fokker (Ueber die Hygienische Bedeutung des Tabakrauches. *Weekblatt van het Nederl. Tijdskr. voor. Gencesk.*, 1884, 35; *Schmidt's Jahrb.*, 1884, 8) however showed that if tobacco-smoke be passed through palladium chloride, that the same manifestations were produced as before the carbon monoxide was removed. Although carbon monoxide, on account of its affinity for hemoglobin, is responsible for a certain amount of damage, it is by no means responsible for the characteristic nicotism. Even Fokker, although he so ingeniously showed this important fact, nevertheless erred when he supposed that the fine particles of carbon or charred materials were responsible for the formation of carbon monoxide at the temperature of the body, on account of their marked affinity for oxygen. It is now well known that such particles may remain in the lungs without producing any symptoms, as in anthracocis. If this were not the case, cooks, firemen, stokers, miners, and chimney sweepers would become poisoned by carbon monoxide. These are but a few of the difficulties that confront toxicologists in investigating the combustion products of a substance which is being used to such an extent that it may correctly be classified among the inebriants.

The Nordrach Treatment of Consumption in Ireland.—The value of any systematic treatment of disease depends largely upon its intelligent application. The practitioner is obliged too often to take much for granted in his trial of a new method, and no doubt many excellent measures have failed of general adoption on account of the lack of knowledge of the precise rationale which the originator has intended should be followed. This is in no way more clearly illustrated than in the dietetic and climatic treatment of pulmonary tuberculosis. The success of systematic sanitarium treatment of this disease is of very great interest to the profession and the utility of such treatment is conceded unanimously.

Dr. P. S. Hitchens has detailed some of the results of the Nordrach treatment as practiced in Rossclare, on the rugged lake coast of Ireland. The principles upon which this treatment depend are extremely simple. They are: first, the abundance of fresh air at all times, day and night; second, superabundance of food, and third, exercise graduated according to the state of the body temperature. The merits of this method lie particularly in the detail of supplying these simple remedies, and it is on this point particularly that Hitchens' paper in the *Dublin Journal of Medical Science*, March, 1901, is of interest. All patients under this system take their temperature in the rectum four times a day regularly, and the patient's rest or exercise depends entirely upon the temperature remaining between the normal limits. All patients with fever are kept at absolute rest in bed, and not allowed to arise until the temperature has been normal for a week. The patient is at first permitted to lie on a couch in his bedroom, then go down to a chair in the adjoining shelter, and finally to take walks very slowly, but of gradually increasing length. Absolutely no other form of exercise than slow walking is allowed. A rest of one hour before meals is insisted upon.

The patients under this system are supplied with three meals a day only: breakfast at eight, dinner at one, and supper at seven. The dietary is especially abundant in butter, milk, cream and potatoes. When it is especially important to increase the patient's weight milk and butter are increased. When the patient has reached a good weight for his height

the amount of food, especially of the milk and butter, is diminished, and it is made the aim to keep him at that level of weight. Abundance of fresh air is obtained by having the windows open in all kinds of weather when the patient is in doors, and by spending the greater portion of the day out of doors in their walks or in the shelter. The complete absence of excitement in the routine life of the sanitorium is a factor of importance. Some very gratifying results have been obtained under this simple treatment, augmented by drugs as the indication arises. It is especially noteworthy to remark that these results have been reached in a climate usually regarded as unfavorable, and it shows that the measures of outdoor life, regulated exercise and feeding will of themselves give excellent results independent of the climatic conditions which surround the patient. It illustrates, too, that great good may very often be done at home by the intelligent co-operation of the physician and patient, yet we recognize full well the difficulty of pursuing any fixed course of treatment at home for any length of time with the same success that may be achieved in a sanitarium. A point of special importance to be taken into account in this connection is the freedom in the sanitarium from little nervous worries and disturbances which must occur in the best regulated domestic circles.

The reading of Dr. Hitchen's paper has impressed us with the necessity of close personal observation of the patient by his physician at all times. We are not in full accord with the method of feeding as adopted at Rossclare, in which three meals a day only are given. It would seem more reasonable to administer smaller quantities of assimilable food at frequent intervals. Again it appears to us that the system of the patient taking his own temperature is an unfortunate one, and that this might influence unfavorably the mental condition of a patient of nervous temperament. In conclusion, it is extremely satisfactory to know that the possibilities of proper treatment exist in the climate in which the patient lives, and as Hitchens has pointed out, it is of great value for those patients to be treated in the climate in which they must afterwards endeavor to perform their life work.

The Employment of Cinnamic Acid in Tuberculosis.—During the last few years there has been considerable discussion over the rationale of the employment of cinnamic acid and sodium cinnamate in tuberculous conditions, and these agents, like many others recommended, have been warmly praised by some authorities and found of less value by others. Cinnamic acid resembles benzoic acid in its pharmacological character, and, like benzoic acid, it is the chief constituent of several of the balsams with which it is generally found. For the past 15 years Landerer, of Stuttgart, has employed cinnamic acid in 240 cases of tuberculosis in his sanitarium at Leysing. He believes that the drug produces an intense phagocytosis and induces a sclerotic condition of the tissues around the morbid process, thereby circumscribing it. He also states that the acid exerts a germicidal influence upon the bacillus. He has employed the cinnamate of sodium in the form of a solution or emulsion. The strength of the solution varies from 1 to 5 per cent., and the reaction is made neutral or strongly alkaline. This preparation is introduced into the body by intravenous or intramuscular injections. Landerer claims to have obtained the following results: In 110 cases of pulmonary tuberculosis of different degrees there were 57 cures, 26 improvements, five unsuccessful cases and 22 deaths. In 72 patients suffering from tuberculous arthritis there were 59 cures, eight improvements, two unsuccessful cases and three deaths. In 18 cases of glandular tuberculosis he had 17 cures and one improvement. In 20 cases of peritoneal tuberculosis there were 16 cures, two deaths and two patients in whom no change was appreciable. In five cases of urinary tuberculosis there were three cures and two deaths. In three cases of tuberculosis of the testicle, one was cured and no result was obtained in the other two cases. Landerer devotes a volume of some 300 pages to the results of his work in this field, and feels justified in concluding that this drug administered as he directs is to a great extent specific. J. Heusser has employed cinnamic acid in the treatment of tuberculosis, and in six cases believes he has accomplished complete cure. In all these cases he practiced injections into the gluteal muscles, beginning with a half minim of a five per cent. emulsion, increasing the amount until a dose of 15 minims was reached. Beyond some burning sensation at the site of the injection, and a passing sense of depression, no unfavorable symptoms were noticed. Fraenkel is the chief opponent to Landerer's views. He has gone over the literature of the treatment of tuberculosis by cinnamic acid, and records a large number of cases in which it has been used. He does not believe that the records show any better results by this method than the older method. In 150 cases of tuberculosis of the lungs, and in five of lupus, in which Fraenkel has used this treatment, he has found no improvement which could be directly attributed to the drug. His experimental studies as to the action of the drug upon the bacillus itself would seem to prove that the drug possesses no bactericidal action. He injected bacilli into the anterior chamber of a rabbit's eye and subsequently

followed this by an injection of cinnamic acid. The effect of the drug upon the bacilli was negative. Fraenkel believes that the drug is useless as an inhalation, that the results of its administration by the stomach are very doubtful, intravenous injection is excessively painful, and subcutaneous injections are equally so unless cocain is used. We may add to this the testimony of Azmanova that the drug is contraindicated in rapid forms of tuberculosis, may cause improvement in the period of infiltration and of softening, but in the acute and subacute forms it is likely to be harmful. The employment of the drug, as reported by numerous clinicians, does not seem to bear out Landerer's claims that it may be regarded as anything like a specific. Cushny does not believe that there is any reason to suppose that the administration of pure cinnamic acid by hypodermic or intravenous injections would induce the changes which Landerer claims; i. e., the irritation, inflammation, and the subsequent cicatrization of the tuberculous nodules. The experience of the profession with this drug bears out the oft-repeated assertion that the search for a specific for tuberculosis will always be a failure. In all cases of tuberculosis, whether improvement or failure in strength take place, we must be cautious in attributing the patient's condition to the effects of the drug. We know, for instance, the value of the proper hygienic surroundings for all these patients, and whatever remedial measures may be used in conjunction with good hygiene, we must not forget the influence of the surroundings in which the patient is placed. We may conclude in agreeing with Landerer that the hyperleukocytosis which the drug induces may be of value, but that there is no ground for his belief in the further action of the drug. The fact, however, that 65 per cent. of cases have been improved in a group of 329 cases collected from literature, indicates that the drug has a distinct, if restricted, place in treatment.

Cacodyl and its Derivatives in Therapeutics.—A résumé of the literature on the employment of the new cacodyl derivatives in therapeutics indicates a wide range of usefulness for these preparations. We have not been able in the past to secure quite the same results of arsenic in varying conditions owing to toxic properties when administered in sufficient doses over long periods of time. Arsenic forms a series of compound with alcohol radicals, and one of these is arsendimethyl of cacodyl. Cacodylic acid is derived from cacodyl, and its sodium salt has been introduced recently as a therapeutic agent The cacodylate of sodium is an organic combination of arsenic containing 55% of arsenious acid. It may be given by the mouth or subcutaneously. Professor Armand Gautier first suggested the use of cacodyl in 1899. He states that if it is given by the mouth or by rectal injection it induces after a few days various forms of intolerance, such as feelings of weight and cramp in the epigastrium, intestinal disorders and a fetid breath accompanied by the odor of garlic. After it is used for some time a slight albuminuria is present in healthy subjects, and still more so in those in whom the kidney does not act normally. Gautier ascribes these untoward effects to impurities which exist in the commercial cacodyl. The odor of the breath is due to cacodylic oxide and this is a poisonous substance which explains digestive trouble and the renal disturbance. Gautier advises that cacodylic acid should be given in its purest state. It should be quite colorless, almost odorless and almost tasteless. As a pharmaceutical test for its purity he states that it should give no precipitate with nitrate of silver or a solution of sal-amoniac in sulphate of magnesium. The sodium cacodylate is the best form of administering the agent, and is especially valuable on account of its non-poisonous properties, which is explained by the fact that it replaces phosphorus in the lecithins and nucleins. It is, therefore, according to Gautier, living matter impregnated with arsenic that the leukocytes disperse through the circulation and bring into contact with the nervous centers in which it seems to become fixed. It is split up in the body very rapidly and the final products are excreted chiefly by the lungs and kidneys. Most authorities recommend that it be administered subcutaneously. It is claimed that these injections are painless and that in this latent organic form all objections to arsenic, as such, disappear.

Following the administration of the drug a marked leukocytosis is observed as well as an increase in the number of red cells. The oxygen bearing power of the blood is increased markedly. An important action of arsenic is to fix on the tissues of the nervous system which seem to become less irritable and to diminish tissue waste produced by nervous overstimulation. Hence it is especially recommended not only in neurasthenia and chorea, but in tuberculosis, diabetes mellitus, Graves's disease, cancer of the stomach, as well as in leukocythemia and the grave anemias. In tuberculosis excellent results are obtained with rectal injections of sodium cacodylate in the so-called pre-tuberculous stage, especially when this treatment is combined with fresh air, full diet and rest. In advanced cases of phthisis the action of the drug is by no means specific, but with hygienic measures the results are at least equal to that of any other treatment. The results obtained in treating diabetes mellitus with the cacodylate of sodium are very encouraging.

It has been found that an animal which has received strong injections of arsenic becomes very slightly, if at all, diabetic if the floor of the fourth ventricle is punctured. Clinically it has been shown that even advanced cases treated with the cacodylate of sodium improved to a surprising degree, and the sugar was greatly reduced in quantity. The results are most interesting in the treatment of leukocythemia. In one advanced case reported in which there was enormous spleen and the presence of albuminuria with only 600,000 red blood corpuscles in a cubic millimetre and a proportion of white corpuscles to red, of one to four, treatment with arsenical injections raised the red corpuscles to 3,200,000 and altered the proportion of leukocytes to one to eighteen. The spleen rapidly became diminished in size, and after six months of treatment the patient was able to resume his work. It is claimed that good results have also been obtained in exophthalmic goitre, and in cancer of the stomach. In the latter condition the cachexia was arrested for some time. N. Dalché believes that the drug may be administered in pill form without evil effects, except that the breath of the patients acquires a slight odor of garlic. He has not noticed the occurrence of diarrhea nor the symptoms of stomach disturbance following the administration of the drug in pill form. M. Gautier strongly advises, however, that this preparation be used hypodermically, and he recommends the following formula: Pure cacodylate of sodium 6.40 grams, carbolized alcohol 10 drops and distilled water a hundred grams. This mixture should be boiled for a short time and then made up to a hundred grams with distilled water and placed in a sterilized vessel. Each cubic centimeter of this mixture contains 5 centigrams of cacodylic acid, which is the quantity advised to be given in one dose every 24 hours. After eight or ten days, during which time these injections are given, it is advised that the drug be withdrawn for an equal interval. Gautier states that the drug is contraindicated in cases in which there is hemorrgahe or hemoptysis or in women during the menstrual period.

The reading of the reports, from which the above facts are gleaned, in addition to many others equally favorable, justifies us in recommending the employment of this preparation in the conditions outlined.

The Use of Salol in Pediatrics.—Salol was first used in medicine by Sahli in 1886. That it is composed of salicylic and carbolic acids, which are broken up in the intestines by the action of the pancreatic juice, is well known. Next to calomel, in the treatment of the diseases of children, there is no one drug so universally employed as salol. Its main indication is rheumatism, in which affection it is a specific. It is known to be of service, nowadays, in all the allied manifestations of rheumatism, in lumbago, intercostal neuralgia, torticollis, tonsillitis and pharyngitis, lithemia, chorea, and also in diabetes mellitis. It is, however, most useful in all forms of gastro-enteritis, especially those in which fermentative indigestion exists. Thus it is given in the summer diarrhea of infants, both mild and severe, in the enterocolitis of larger children, all forms of cholera, dysentery, duodenal catarrh, and catarrhal jaundice. In the infectious diseases, especially influenza and typhoid fever, salol seems to have a striking effect upon the bone pains, headache, and angina, which occur at the onset; later it acts as an intestinal and urinary antiseptic. In cystitis, urethritis, etc., it is also indicated. Externally it has been used as a dusting powder upon open wounds. In the anemia seen in growing children, whether due to chlorosis or secondary to chronic indigestion, salol is of great service. But most marked of all, though no text-book mentions the fact, is the action of salol in small doses, sometimes combined with a minute quantity of calomel, in reducing moderate pyrexia in young children, when the cause of the fever has not, as yet, been discovred. Much more effective in action, it now replaces nitre and the Spirits of Mindererus, the popular antipyretics of our ancestors. Large doses of salol are only given in acute rheumatic affections, 5 to 10 grains every two hours, depending upon the age of the child. In ordinary doses, 1 to 3 grains every three hours, there are no contraindications to the use of salol, and poisoning is unknown. Not the slightest doubt exists that salol has now become ubiquitous in pediatrics.

Subcutaneous Injection of Quinine in the Treatment of Puerperal Endometritis.—Aufrecht (*La Sem. Med.*, May 15, 1901) believes that there is a causal relation in certain cases between puerperal fever and the presence of the pneumococcus. For a long time he has treated lobar pneumonia with hyperdermic injections of quinine, and recently he practiced the same method on a woman who was confined during the course of pneumonia and presented the symptoms of a puerperal endomentritis. The success of the treatment was complete. For these injections he uses a solution prepared by heat of one gram of the chlohydrate of quinine in 34 grams of water. For two or three days, Aufrecht injects 17 grams of the solution in the subcutaneous tissue of the flank. This contains 0 gr. and 50 cg. of the chlohydrate of quinine. This method of treatment should be accompanied by such local measures as may be necessary. [T. L. C.]

To Remove Plaster-of-Paris Casts.—The *Med. Times* (says the *Journal A. M. A.*) gives the following method of removing casts: Mark a line, with a lead pencil, on the cast. Along this line apply a little cotton or a thin layer of cotton-wool and soak the same with peroxid of hydrogen, the wool being about ½-inch wide. In a short time the plaster will be soft enough to be cut through with an ordinary knife or a pair of scissors. Vinegar or bichlorid solution may be used instead of the peroxid of hydrogen.

Original Articles.

ON THE TREATMENT OF BRIGHT'S DISEASE.

By JAMES TYSON. M. D.,

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It cannot be said that the last quarter of a century has added much to the effectiveness of the treatment of Bright's disease. A more accurate notion of the relations of albuminuria to Bright's disease, a more minute knowledge of its morbid anatomy and a sharper discrimination of the relations between heart disease and kidney disease have been more characteristic of this period. It appears to me that one of the most important additions to our knowledge of treatment is that we have learned better to know when it is wise to omit treatment and leave well enough alone. For there are many cases in which the essential signs of Bright's disease are present, yet no symptoms which call the patient's attention to his illness. Most of these cases are accidental discoveries for which we are often indebted to the life insurance examiner, and most of them are better without active treatment. In fact, it may, I think, be truly said, the tendency with all of us is to do too much in the way of treatment. In presenting, therefore, what I believe to be the treatment founded on our efflisting knowledge, I fear I shall be disappointing to many.

The treatment of acute Bright's disease is most easily disposed of. The indications are clearer and more easily carried out, while its results are far more satisfactory than in the chronic form. The condition is always an inflammatory one, and the indications are to subdue inflammation, while the measures employed are in no way peculiar, including especially absolute rest and depletion by purgatives, and occasionally by local blood-letting favored by local warmth and moisture. A rational modification of treatment is to put off a little later the use of diuretics, at least until depletion is accomplished, when they should be associated with the free use of diluents to favor their action. The chief purpose of the diuretic in acute Bright's disease is to restore elimination, the arrest of which constitutes the great danger of the disease. Elimination is also aided by purgation and by promoting skin action by the drugs usually employed for this purpose, by hot air and vapor baths and hot packs. The danger of toxic accumulation is also diminished by a diet as free from nitrogen as possible and in a liquid form. By such measures as these a large majority of cases of acute Bright's disease, or, what is the same thing, acute nephritis, are cured, so that the prognosis, on the whole, may be regarded as favorable.

The successful rational treatment of the various forms of chronic Bright's disease is far more difficult. Premising that many cases of chronic nephritis could be averted by a proper and sufficient treatment of every case of acute nephritis, we must remember, also, that none of the various forms of chronic Bright's disease can be regarded as inflammatory in any sense, though we speak of chronic nephritis. So far from the kidney being hyperemic, it is much more frequently anemic. One of three predominating local conditions exists. Either the tubules of the kidney are more or less choked with their desquamated, degenerated epithelium which distends them and compresses the blood-vessels around and between them, cutting off their nourishment; or they are already destroyed and replaced by connective tissue; or a combination of these two conditions exists. The effect of either condition is to interfere with secretion and favor the accumulation of toxic matters in the blood.

Are there any means directly adapted to unload the distended tubules, or to restore the destroyed ones? I fear none, except the ever-active but more or less hampered effort of nature to restore her damaged organs and impaired functions. Rational and promising measures would be such as would restore the normal circulation, bring more blood to the kidney, nourishment to the starved and dying renal cells, and rebuild the destroyed tubules. Hence, it has occurred to more than one clinician to give cantharides in chronic Bright's disease, but so far as I know, no favorable results have been reported. Moreover, a moment's consideration will recall the fact that cantharides produces a hyperemia by direct action on the renal cells and not by stimulating the circulation directly. More rational would it be to give cardiac stimulants which will send the blood through the kidney in increased quantity and at a more rapid rate, and it is not impossible that the judicious use of such drugs as digitalis, strophanthus, sparteine and caffeine may be helpful in the treatment of chronic Bright's disease; though we are at once met with the thought that it is more than likely that the long-continued use necessary to accomplish results with these remedies would be attended with harmful results to the heart itself. I am not referring to these remedies now as aids to the relief of dropsy and other complications, but as agents for the cure of chronic Bright's disease. There can, however, be no objection to their intermittent use, and the possibilities which attach to them should be remembered.

Another well-recognized therapeutic fact should be borne in mind in seeking for co-operating influences, and that is the liquefying effect of an alkaline reaction of urine, and that such alkalinity may be maintained by alkaline remedies like potassium citrate, potassium acetate and potassium carbonate, and by alkaline mineral waters.

These considerations bring us to the conclusion that the treatment of chronic Bright's disease must consist mainly in measures which will help nature accomplish her difficult task. What are these measures?

In the first place, it becomes desirable to do what we can to rest the kidney, to diminish its wear and tear and to substitute its offices by those of other organs. By general acknowledgment, the first of these indications is best met by a selected diet, including drink. It is recognized that the chief office of the kidney is to separate urea and the xanthine compounds, represented especially by uric acid, and that all of these are derived from the proteid foods of which lean meat and albumen of eggs are the type. It is manifest, therefore, that a rational

*Read before the Monroe County Medical Society, at Rochester, N. Y., May 30, 1901.

treatment requires the restriction of proteid foods. The degree of this restriction must be determined by the severity of the case. In the severest forms the restriction should be as absolute as possible, although even in these the proportion of albumen contained in dilute milk does not seem excessive. The farinacea, represented by rice, potato, the various starches, arrow root, tapioca, and even white bread with butter, are perfectly allowable, and to these may be added, where digestion is good, the soft, juicy vegetables in season, such as peas, beans, spinach, asparagus and the like, as well as fruits in liberal quantities. Fats are also allowable when they can be digested.

What shall we say of meat and eggs? In bad cases all meats, including poultry and fish, as well as red and white meats, must be forbidden. In mild cases, where active symptoms are wanting, they should be very much restricted, say the equivalent of a small mutton chop, or an egg of which the yolk may be used in larger quantity than the albumen. An amusing error of practice has arisen from the habit of disenjoining red, or butcher meat, as it is sometimes called, as contrasted with the white meat of chicken and fish. Persons often consult me who I find are consuming large quantities of poultry and fish under the impression that they may eat unlimited quantities of these, provided they do not eat red meats,—forgetting that the composition of both is the same, and that the only difference is in the smaller amount of red blood in the white meats, and they are surprised when I tell them there is more danger in a half pound of chicken than in a quarter of a pound of roast beef.

There can be no doubt that a man can live and maintain his health on a fatty and farinaceous diet with such an amount of proteid as is contained in vegetables and milk. Such a diet may not be compatible with the highest physical and intellectual development, but that a man may work hard and subsist upon it is daily shown by the constant habit of the Chinaman and East Indian, who scarcely know meat from one year's end to another. Experiments which need repeating also go to show that vegetable proteids are attended with less xanthine eliminations than animal proteids.

No patient with chronic Bright's disease should use beef tea or bouillon, or the so-called beef extracts as a diet. Over and over again it has been shown that these substances are concentrated solutions of the very salts which go to make up the solids of urine itself, in addition to a certain amount of albumin. Yet I am constantly consulted in cases where the physician is nourishing his patients on such food with the impression that he is doing a good thing, whereas he is either overworking the kidneys or overcharging the blood with toxic substances, or both. Whenever there is an aggravation of symptoms a recourse must be had to a milk diet. Diluted milk is to be preferred to skim milk, because in the latter the proportion of proteid remains unchanged, and the fat, harmless fat, is removed, while in dilute milk the proteid is reduced and much of the fat is retained, as is, of course, desirable.

Because of their irritating qualities, alcohol, strong wines and malt liquors are disallowed. They all increase the work of the kidney and tend to load the blood with toxic substances. At the same time it is doubtful whether any harmful results occur from the moderate use of light wines, like Moselle, Rhine and light clarets, especially when freely diluted with water. It goes without saying that substances directly irritating to the kidney, such as mustard, horse radish and pepper must be avoided.

The second indication supplements the office of the kidney by promoting the function of other organs, especially the skin and bowels. The action of the skin is favored by warm clothing, as well as by warm seasons and warm climate. Hence, the time-honored advice that the patient with chronic Bright's disease must wear wool next the skin. There is abundant evidence to show that a residence in a warm climate, and especially in a warm, dry climate, is favorable to cases of chronic Bright's disease, and in my book on Bright's disease I relate a striking instance of the salutary effect of a residence in a warm climate and the rapidly fatal effect of removal to a cold damp one.

I have called attention to the alkalies in the shape of alkaline mineral waters and solutions of alkalies. Unfortunately, this country furnishes no really alkaline mineral waters east of the Rocky Mountains, and those of our western country are not fitted for use. The imported Vichy and Vals waters fulfil the indication. The artificial Vichy, much advertised, contains practically no alkaline constituent, though it would be very easy to make an artificial Vichy which would contain a sensible and useful amount of alkali. Pure waters and distilled waters should be used where waters are "hard" or contain considerable amounts of sulphate of lime.

As a part of treatment, including the promotion of skin action, I wish to mention a measure which I have found of signal service in improving the general condition of patients with chronic Bright's disease where not needed to avert serious symptoms like dropsy and uremia, viz.: the frequent use of the vapor bath by one of the numerous convenient forms of aparatus known as cabinets and possessed by many families. A sweat thus produced continued for twenty minutes to half an hour just before going to bed has the happiest results in promoting the general well being of the patient. His energy increases, he improves in appearance, the skin becoming clearer and smoother. Every other night is usually often enough and the patient can manage it himself. Of course, the bowels should be kept regularly and even freely open, as in this way elimination is favored and the kidneys are rested.

Are there any drugs which have a direce effect of reducing an albuminuria, if it is present? I know of none, and I believe this is the testimony of most clinicians of experience who have endeavored to settle this question. Robert Saundby alone seems to have had some favorable results in this direction in experiments with alkalies, tannic acid and nitroglycerine, taking care to eliminate sources of error. In experiments with a large number of drugs, on the other hand, including digitalis, strophanthus, caffeine, sparteine, the terebinthinates, iron and others, including purgatives, he found albumin increased. He does not, however, recommend the remedies which seemed to diminish albumin, say-

ing truly that the maximum daily loss of albumin in the severest cases rarely exceeds half an ounce of dry albumin. It is the condition causing the albuminuria rather than the albumin itself which calls for treatment.

A word as to the effect of exercise or muscular activity by the subjects of chronic Bright's disease. It is well known that albuminuria is increased by exercise, especially shown in cases of so-called functional albuminuria where there is no albumin in the urine on rising, while the albumin appears immediately after the patient assumes the upright position in the morning, even before food is taken. It goes without saying, therefore, that in advanced cases where there is dropsy and large albuminuria, the patient should maintain the horizontal position. In milder cases the importance of fresh air and outdoor life demands some relaxation of such regulation. On the other hand, it is evident that hard work or violent exercise is harmful to all cases of chronic nephritis, and I have many times observed abatement of symptoms, and especially of albuminuria, in overworked persons when they desisted from work. Among these thus influenced I have more than once found overworked medical men. In persons in whom it is necessary to limit exercise, massage becomes a valuable measure of treatment which should not be overlooked.

I say nothing of the treatment of the more serious symptoms of Bright's disease, like dropsy and uremia, as it would prolong my paper needlessly, and I have sought more particularly to cover treatment which will tend to cure the disease, or at least avert the appearance of these symptoms.

What has been said of the treatment of chronic Bright's disease is intended to cover all forms, including chronic interstitial nephritis or contracted kidney. I desire to say a few words more, however, on the use of iodide of potassium in this form. Theoretically, this drug should have some effect in removing the fibrous interstitial tissue. Practically, also, according to the testimony of many clinicians, including the late Sir Grainger Stewart, Senator, Bartels, Lecorche, and others, it has had a good effect in this form of disease. It is not unlikely this effect may be exercised through its admitted action in diminishing blood pressure. While I cannot with absolute certainty confirm these observations from my own experience, though I have tried it many times, it ought to be tried. The doses administered should always be small, from three to seven grains in adults and smaller doses in children. I have seen very unpleasant toxic effects produced in patients with contracted kidney by doses of less than five grains, whether as a result of the disease itself or an idiosyncrasy of the patient, I do not know. It should be kept up for some time and discontinued when its specific toxic effect is produced.

Treatment for Clavus.—In Fox's *Atlas of the Diseases of the Skin*, Part, V, is given the following formula of Vigier's:

℞

Acidi salicylci	gr. xv
Ext. cannabis indicae	gr. viii
Alcoholis	*m* xv
Etheris	*m* xl
Collodii flexilis	ad *m* lxxv

M. S. Apply locally to corn several days in succession.

THE INDUSTRY OF ARTIFICIAL MEDICINAL REMEDIES.

By J. W. WAINWRIGHT, M. D.,

of New York.

Chemistry and medicine are so closely associated that they meet at many and seemingly divergent points; in fact, the scientific practice of medicine is largely the application of physiological chemistry. Life processes are the results of diversified chemical synthesis and analysis, which produce the phenomena of animal and vegetable existence. Experience and chemical investigation have taught us the most favorable conditions for normal or physiological processes, and it is the office of the physiological chemist so to study these life processes as to enable him to make such application as will preserve them or restore them if deranged. Formerly we knew that drugs had certain actions, or, produced certain effects when administered. Why, was not known, nor was it deemed necessary that such knowledge was requisite to the proper treatment of diseased conditions; but the revelations of chemical synthesis, the study of pathogenic microorganisms and the part which they play in the causation of disease, have stimulated a closer study into the rationale of therapeutic measures.

The study of bacteria and their effects on tissue changes; formation of the destructive toxins; the leukomaines and their antitoxic properties, as well as the alexins and the ferments; the role played by the leukocytes, have revolutionized the etiology, diagnosis, prognosis and treatment of disease. It is not alone sufficient that an astringent be given because there is diarrhea, an anodyne to relieve pain, or a cathartic to unload the intestine. We must know why there is diarrhea, from what cause arises the pain, why there is inactivity of the intestines, and apply such measures of relief as will remove the cause and preserve or restore the normal condition with the least amount of disturbance to the organism. The successful practitioner must seek to understand the physiological or chemical actions of the remedy given.

Formerly, the main dependence of the therapeutist was in drugs of more or less medicinal value of vegetable or mineral origin, but to-day, the conditions have largely changed. The druggist no longer manufactures the medicinal products; it is the technical pharmaceutical chemist. Of recent years, the advance has been so rapid and the remedies applicable based upon such rational and scientific grounds, that the artificial products are of the greatest consequence. Attempts were, and still are made to isolate physiologically active principles of plants, but this has become of minor importance.

Even the successful introduction of chloroform did not awaken an interest in artificial products for medicinal use, for years passed without further additions to them, or, until chloral and salicylic acid were made known. Then a few chemists proceeded to cautiously open up this most fertile field. It was not, however, until after the introduction of the antipyretics that the new era can be said to have really begun.

In 1881, Donath showed that chinolin and its derivatives were similar to chinin or quinin in their physiological action. This was followed by the discovery of kairin by O. Fischer in 1882, and thus was shown the possibility of *building up* compounds of similar structures and medicinal action to those found in nature. Kairin was soon followed by acetanilid and the accidental discovery that it had antipyretic properties. Now began a systematic search and the discovery that the physiological action of certain groups was influenced by their constitution. Antipyrin of Knorr quickly followed, to be succeeded by phenacetin and iodoform, iodol and sozoiodol. The extraordinary success of these pioneer synthetics or artificial preparations as well as the enormous profits accruing to the inventors and manufacturers had the effect of stimulating investigators in this new field, and the result was soon a plethora of remedies so-called which were offered the physician in many cases with insufficient, and in others, without clinical tests. The most actively worked group was then, as now, the antiseptics.

Although certain ones such as iodol (tetra-iodo-pyrrol) and sozoiodol (di-iodo-para-phenol-sulfonic acid) were well received, it was soon found that in spite of their being inodorous, there was great liability to decomposition, and iodoform maintained its supremacy, especially as price must largely figure in the popularity of a remedy.

Eichengün succeeded in producing a chemical compound with but slight odor, which was sterilizable, from iodoform with urotropin, calling it iodoformin (hexa-methylene-tetramin-iodoform) but it was found that wound secretions had the effect of separating the iodoform as such from the combination, thus annulling its chief claim, odorlessness, and it was soon discarded. Iodoformol produced by the same chemist by the action of ethyl-iodid on iodoformin, failed for the same reasons.

Classen brought to the notice of the surgeon, nosophen (tetra-iodo-phenol-phgthalein) made by the action of iodin upon phenol-phthalein. It is rather an exception in the list of iodo-antiseptic preparations, inasmuch as unlike them, it does not depend for its effect upon the liberation of iodin. After a time it was found that it could be administered internally, and is said to pass through the alimentary canal undecomposed, being insoluble in either acid or alkaline media. Its antiseptic character is probably due to its phenol constituent strengthened by the introduction of the iodin into the molecule, as has recently been demonstrated that the introduction of a halogen into phenols increases their disinfecting properties. In spite of the promising future predicted for nosophen, it has apparently met the same fate as other iodoform substitutes.

Subsequent attempts to saturate organic molecules with iodin gave us sanaform (di-iodo-salicylic-methyl-ester) prepared by the action of iodin on oil of wintergreen. Aristol (di-iodo-dithymol); europhen (di-isobutyl-ortho-cresol-iodid); iodoformogen, a compound of albumin with iodoform with but slight odor; iodo-albumin, obtained by the action of iodin on peptone or protogen; iodothymoform (iodo-thymol-formaldehyd); and loretin (meta-iodo-ortho-oxyquinolin-ana-sulfonic acid) a powerful antiseptic.

In addition to the iodin derivatives, we have those of silver which it would seem were entirely rational, being effective antiseptics free from active destruction to the organism. Laboratory experiments have demonstrated that 1-1000 solutions of these products destroy virulent micro-organisms in five minutes, while 1-50,000 solutions prevent their development.

We have actol (silver lactate), odorless and soluble in water which is very destructive to micro-organisms; argentamin (ethylene-diamin, silver phosphate) containing 6.5% of silver; itrol, or, silver citrate, strongly endorsed by Credé as a gonococcicide; largin, an albumin compound with silver, containing, it is said, 11.1% silver; argonin, a compound of silver with sodium casein, containing 4% of silver; protargol, a silver albumose containing 8% of silver; hydrogol, or colloidal silver, in aqueous solution, etc.

Much interest was at one time manifest in the bacilliargent of Credé, a soluble silver, the interest being from a scientific as well as a pharmacological point of view. While the hydroxids of iron and aluminum have been by some thought to form a link between the crystalloids and colloids, the metals themselves were considered crystalloids. The bringing of metallic silver into a colloidal form, thus once more exploded the older theories.

All the silver salts are offered as substitutes for silver nitrate, being generally free from the corrosive action of silver nitrate, neutral, not combining with albumin, sodium, or the fluids, to form insoluble compounds, thus preventing the penetrating of the solutions into the tissues.

Next come the antiseptic preparations of mercury, notably the asterol (para-sulfo-carbolate of mercury with ammonium tartrate); mercuric formamidate; mercuric iodate (iodic acid); mercuric oxycyanid, said to be six times more powerful as an antiseptic than corrosive sublimate, while being neutral, less caustic and without the property of coagulating albumin; mercuric peptonate, mercuric salicylate, mercury albuminate, mercury phenate, mercury gallate, and mercurol, a compound of nuclein obtained from yeast and metallic mercury, which does not coagulate albumin.

The aliphatic aldehydes and combinations claim a permanent place as antiseptics, formaldehyd being now much used, while its derivatives have met with much favor. We have glutol, a combination of formaldehyd with gelatin. This product was at one time used as a coating for capsules, they being called glutoid capsules, the aim being to prevent solution in the acid media of the stomach and thus serve the purpose of introducing medicaments direct into the intestines, there to be dissolved in the alkaline secretions, when the effect was secured without disturbances of the stomach. Paraform (trioxymethylene); protogen, obtained by the action of formaldehyd on egg albumen; amyloform, resulting from the action of formaldehyd on starch; dextroform, obtained from the action of formaldehyd on dextrin, soluble in water, giving off formaldehyd when brought into contact with wound secretions. Tan-

noform, resulting as a condensation product of formaldehyd on gallo-tannic acid.

Sulfonic acid derivatives, particularly asaprol beta-naphtol disulfonate of aluminum); the various salts of sozoiodolic acid, such as those of mercury, potassium, sodium, lead and zinc, the cresols and the guaiacolates.

Tricresol, a compound of ortho, meta and para cresols, is said to be three times as active a germicide as carbolic acid. Lysol containing 50% of cresols, forming a clear saponaceous liquid with water, a 1% solution with water forming a most excellent disinfectant for the hands, obviating the necessity of using soap. It is the most powerful disinfectant and germicide known for use in rendering sputa and stools inoccuous. Losophan (meta-cresol-triiodid); thymol (methyl-isopropyl-phenol).

Of the guaiacolates, we have the benzoate, a colorless powder, free from odor and taste, containing 54% of guaiacol. The guaiacol carbonate (duotol), phosphal or phosphite; salicylate (guaiacol salol); bi-sulphonate of quinin (guaiaquin); biniodid, cinnamate, etc. The napthols and salicylates, most prominent of the latter being the phenol salicylate (salol); the gallates, tannates; the chinolin derivatives, loretin, chinosol, diapthol, diaptherine, bismal, betol, and a world of miscellaneous products, including lactol, chrysophanic acid, cinnamic acid, aminoform, tumenol, thiol and ichthyol.

Following the iodin combinations, the phenol derivatives have given the most satisfactory results as antiseptics. Carbolic acid is to be regarded as the phenol par excellence, while thymol, and menthol have obtained prominence. Para-chloro-phenol has been quite favorably commented upon in the treatment of lupus, when made into a paste with lanolin and starch.

Osterman was the first, I believe, to direct the attention of gynecologists to the merits of chinosol (oxy-chinolin-sulfonate of potassium) which, in solution, 1-40,000 prevents the development of bacteria. The various gallic acid preparations, among them being dermatol (basis subgallate of bismuth) has been very generally used, while a limited use has been made of gallol (basic aluminum gallate). Airol (oxyiodid of bismuth sub-gallate); gallanol, a methyl-ether of gallic acid, possessing decided astringent properties, employed in skin diseases. Of the tannic acid combinations, the more prominent as intestinal astringents, are tannalbin, a preparation of tannin and albumin; tannigen, an acetic ester of tannic acid; tannoform, a product resulting from the action of formaldehyd on gallo-tannic acid; tannon, a combination of tannin with urotropin. They are all supposed to be unaltered in weakly acid secretions, but quickly disintegrated in the alkaline secretions of the intestines.

Ichthyol (ammonium-ichthyol-sulfonate), an organic product obtained from bituminous mineral; thiol (di-thio-salicylate of bismuth) and tumenol (sulfo-tumenolic acid), a compound closely allied to ichthyol and obtained practically from the same source, but without the offensive odor of ichthyol, were brought into notice as parisiticides in the treatment of various forms of skin affections.

The discovery of the numerous antipyretics and analgesics would give the history of the progress of pharmaceutical chemistry if quality had kept pace with quantity. The marvellous success of antipyrin and phenacetin gave fresh and renewed incentive to the chemists who were kept alive to the necessity of researches in this one direction. It is quite safe to state that few chemical procedures exist which have not been industrially worked with these two chemical groups as a base. Among the pyrazolon (antipyrin) derivatives, come salipyrin, a salicylic acid combination; pyramidon (di-methyl-amido-phenyl-di-methyl-pyrazolon); ferripyrin (ferric chlorid antipyrin); tussol (antipyrin mandelate) used in whooping cough; hypnal (mono-chloral antipyrin); antipyrin tannate and numerous less important ones.

Among the phenetidines other than phenacetin, we have lactophenin, a lactic, rather than an acetic acid product. Phenocoll (amido-acetyl para-phenetidine hydrochlorid). Aside from these, numerous other phenatidin products appeared, but received scanty notice. It must not be concluded, however, that because a preparation fails of success, it is always for lack of therapeutic worth. Often commercial push is the most potent factor in the success of a preparation. Kriofin, in which the acetic acid component is substituted by methyl-glycocollic acid would doubtless have achieved greater renown had it not been for a plethora of older and tried products applicable to the same conditions. Not content with these meritorious remedies we have had forced upon us mixtures, the bases of which are either one of the above mentioned or of acetanelid; citrophen (citric acid and phenacetin) migrainin (antipyrin caffein citrate), cocopyrin (antipyrin and cocain), migrol (caffein, sodium bicarbonate and guaiacetin) being a few of this class. If this proves anything at all, it certainly proves that there is a demand for ready-made prescriptions, or that the physician will not, or cannot, write his own.

Salophen (acetyl-para-amido-phenyl-salicylate), in which the ethyl group is substituted by salicylic acid, is offered as a substitute for salol.

A perfect substitute for quinin which would be without taste and the unpleasant by-effects of that article, is desirable, and although such a product has been offered (euchinin) and extravagant claims made for it, it has not succeeded in securing friends to any degree.

We come now to antiphthisics, and their name is legion. Following Sommerbrodt, who fathered the creasote treatment, came the more desirable guaiacol, but after a time, it was realized that creasote and guaiacol as such could not be pushed up to the required remedial dose without interference with the digestive function, which is the main dependence in sustaining the unfortunate subject of this dread disease. The carbonates of these two products were a decided advance, and they became deservedly popular. These were followed by guaiacol benzoate (benzosol), cinnamate, phosphite, salicylate, succinate, bi-sulfonate, guaiacetin (pyrocatechin-mono-acetic acid), and eugenol (methylester of allyl-dioxy-benzine), etc., all having a deservedly personal following. The numerous substitutes for creasote and guaiacol offered, and the large sale for them is evidence that the physicians, as a class, do

not favor the use of the intensive creasote treatment at one time advocated.

Of the hypnotics, many have been offered, but very few retained as of value. Chloral (erroneously called chloral hydrate) as not only a hypnotic, but a sedative, met with such unqualified approval, that other products for like purposes have failed of recognition. As pure hypnotics, exceptions may be made in favor of sulphonal, trional and chloralamid. Peronin (benzyl-ether of morphin hydrochlorid), heroin (di-acetic ester of morphin) as well as dionin (mono-ethyl ester of morphin) have been found useful in the treatment of coughs. They are morphin derivatives, and especially recommended in coughs of phthisis. Whether they serve a better purpose than codein is doubtful.

A number of anesthetics, other than cocain, have lately sprung into existence, notably eucain, holocain, orthoform and nirvanin. Einhorn and Heinz have made it perfectly clear that all amido benzoic acid ethers possess anesthetic properties, some of which are also decidedly germicidal, solutions remaining sterile indefinitely. Eucain (benzoyl-venyl-diaceton-alkamin hydrochlorid) is less irritating than cocain, while it is more active, less toxic, and is not decomposed by boiling. The same investigators were able to demonstrate also that all esters of the aromatic hydroxy-amido acids possessed local anesthetic properties, especially so, the methyl-ester of para-amido-meta-oxy-benzoic acid, known by the trade name of orthoform. This preparation has the unique property of producing continuous anesthesia when applied to the nerve endings, as only a small portion is dissolved in the secretions, and thus made available at a time. Thus, anesthesia can be prolonged according to the amount applied. It is non-toxic, non-irritating, antizymotic and stable.

Holocain (para-diethy-oxy-ethenyl-diphenyl-amidin hydrochlorid) is obtained by the interaction of phenacetin and para-phenetidin. It is infinitely superior to cocain in producing ocular anesthesia in that it acts very much quicker, is less painful, and does not dilate the pupil, affect the corneal epithelium, or produce ocular tension. For producing anesthesia previous to the removal of foreign substances from the eye, it has practically displaced cocain in the hands of the oculist. Solutions can be kept indefinitely in porcelain containers, or, in glass bottles previously boiled in hydrochloric acid.

Nirvanin is another one of the later local anesthetics, and is closely allied to orthoform, being the hydrochlorid of diethyl-glycocoll-p-amido-oxy-benzoic methyl-ester. This product is freely soluble in water, and when used subcutaneously as a succedaneum for cocain, is found to be non-toxic, non-irritating and germicidal. Its use is not followed by depressing effects upon the heart, or respiration; is free from the danger of drug habit, while patients can proceed to their homes or usual avocations immediately after operations. Dr. Elsberg in the *New York Medical Journal*, January 13, 1900, declares it 10 times less toxic than cocain, and three times less than eucain, while its solutions can be boiled without affecting its anesthetic properties, although this has been found unnecessary, as a 1% solution prevents the development of micro-organisms.

As several years are usually required to determine the absolute range of usefulness of a remedy, it is not thought wise to endeavor to bring a paper of this character up to the time of writing. Hence, the main portion in which we can mention comparatively few of the multitude of new remedies that have appeared, covers a period ending in 1897. Nevertheless, very many synthetic or artificial remedies, some of them of decided merit, have been introduced since that date, which are reasonably certain to prove valuable additions to our materia medica, and I cannot close without alluding briefly to some of them.

Oxaphor (oxycamphor) has proven a very valuable anti-dyspneic, relieving the distress accompanying dyspnea from organic heart disease, phthisis, asthma, whooping cough, etc. Its use is not followed by untoward effects, as is that of the narcotics, particularly morphin.

Aspirin (acetyl salicylic acid); phenosol (salicyl-acetate of phenetidin); pyrosal (salicyl-acetate of antipyrin) are the more prominent antipyretics. Saligenin (ortho-oxy-benzoyl alcohol) is put forward more particularly as an antirheumatic, as is also aspirin. Acoin (di-para-anisyl-mono-phenetol-quanidin hydrochlorid) has been offered as a local anesthetic. Of the narcotics or anodynes, the more prominent are heroin (di-acetic ester of morphin) and dionin ethyl-morphin hydrochlorid) previously mentioned, and of the hypnotics, dormiol (amylene chloral) and chlorotone (aceton chloroform). Of so-called antiphthisics may be mentioned thiocol (potassium guaiacol-sulfonate) and guacamphol (camphoric acid ester of guaiacol).

The derivatives of pyrogallol include eugallol (mono-acetate of pyrogallol) and saligallol (di-salicylate of pyragallol) which are intended for dermatological use as is the petrosulfol, a representative of the ichthyol class.

The therapeutic efficacy of arsenic has been increased by the introduction of the cacodylates. Certain other remedies, while not synthetic, are in all respects artificial, and should have mention here.

Animal Extracts: I quote from my work "New Remedies and Therapeutic Measures," "Various glands from freshly slaughtered sheep and other animals, employed either in the fresh state, desiccated, or, as carefully prepared extracts, have, within the past few years, found a constantly increasing usefulness in therapeutics." Brown-Sequard's enthusiastic claim "that all the glands of the body, whether excretory or not, supply to the body useful principles the absence of which is felt when these glands are extirpated, or, destroyed by disease," has been verified.

The main difficulty with the definite and scientific study of the active principles of these various animal secretions and organs, is their minute quantity which limits the study of their chemical nature. The great activity—as evidenced not only by their individual specific effect, but by other manifestations, such as tachycardia, faintness, etc., following the administration of even small doses—seem to be caused by an organic principle belonging to the class of leukomaines, lecithins and protogors; lecithins under certain experimental conditions, will split up into glycero-phosphate, steric acid and cholins,

the powerful actions of which are well known. Thus we readily see that we have certainly arrived at the borderland of the more definite medical and chemical science of the future. I cannot, however, indulge myself in this fascinating branch of medical science, but merely mention the various glands which have received attention. Thyroid, thymus, suprarenal, pituitary, spleen, testicular, prostate, ovarian, brain and bone-marrow extracts, which are individually treated in the above-mentioned work.

Serum therapy is an established fact, and further applications may be predicted than those now known, astonishing as they have been. Diphtheria antitoxin, tetanus antitoxin, sera for the treatment of pneumonia, tuberculosis, streptococcus infection, yellow fever, plague, typhoid, cholera, hydrophobia, etc., have yielded most encouraging results, but the end is not yet. An investigating spirit pervades scientific men, and nature will be besieged on all sides until she yields up her secrets. (Reluctantly, one by one, but a word here, a straw there, made possible by the microscope and patient never-tiring persistent study will bring its reward, and there now lives not a man who dare predict thus far, and no farther canst thou go).

Happily, we must patiently be content with this knowledge in part and by degree, else all would be confusion, and thus we build, construct, aye, create, if you will. The human mind cannot grasp or comprehend at once. Knowledge must be dealt out to man by little-so little-at a time, and this must be made to occupy its place in the construction of the whole. It is not given to him to witness the finalé of human achievements. The house must be builded with bricks and mortar, patiently placed, adjusted and grouped; when complete, he may stand afar off and admire, but this is only for to-day, is but one building, and cannot be accepted as the final perfection of structure or design. In a few days, there will be designed and built another, a better, to take its place, thus we go on in the eternal evolution of not only material things, but in thought, and the end is not near.

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PRINCIPLES OF CARDIAC THERAPEUTICS IN RECENT VALVULAR DISEASE*.

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In the whole history of the treatment of diseases of the more vital organs, there is no part more interesting than the development of our present-day treatment of diseases of the circulatory organs. Looking backward twenty years we find that the heart, with its diseases, was at that time considered almost entirely by itself, without a due appreciation of the associated functions normally, and the related structural changes pathologically, in other parts of the circulatory apparatus. Valvular lesions were usually regarded as the point of origin in cardiac diseases, and accordingly claimed a large share of attention. Diseases of the arterial system, with the exception of the grosser lesions, were hardly recognized, so that the occurrence of such conditions as hypertrophy or fatty degeneration of the heart, without valvular lesion, could not be satisfactorily explained.

Although the frequent existence of a general arterial sclerosis accompanying chronic Bright's Disease, was recognized by Gull and Sutton, and by them regarded as the cause of the cardiac hypertrophy that is usually present with contracted kidney, their views had not been generally accepted. To-day the state of the arterial system is always considered in connection with cardiac diseases, and treatment is better characterized by the term "cardio-vascular" than "cardiac." Moreover, attention is being directed toward another factor in cardiac pathology not sufficiently recognized by the profession,—namely, the condition of the heart muscle, its structure, its power, and, most important, its nutrition. But whatever the initial cause, or its lesion, our advice is usually first sought when cardiac symptoms, or, in other words, signs of cardiac disability, occur.

With any case of cardiac disease before us, let us ask: What is the object of treatment? Given a heart disabled from any cause, the primary object must be to maintain an efficient circulation for the greatest possible length of time. But we should have clearly in mind what we understand an "efficient circulation" to be. A proper conception of the term involves some general considerations. Do we mean simply a strong heart capable of sending a large amount of blood, with good force, into the arteries? This is the common, although at best a partial conception of the term. It will be more in line with the purpose of this paper if we view the circulation from a somewhat unusual standpoint. Let us for a time subordinate the purely dynamic factor and base our view upon the need of the organized body, which calls for a circulation of nutritive fluid.

When we reflect that the obscure processes of nutrition are carried on so largely within the cells of the tissues, and that the pathology of every disease has its origin in the alteration or failure of cell function, we are looking into an ever busy laboratory, to supply the needs of which the circulation is required and is so perfectly adapted. The methods by which these needs are met, i. e., the arrangement of vessels and the development of currents within their contained fluids, vary with the order of organism. In the lower and simpler orders the forces of osmosis and capillary attraction are largely employed; further on, tubes or vessels capable of contraction contribute more positive force to the circulating fluid; and finally, in the highest orders we have a complex apparatus consisting of clearly differentiated parts, among which the perfect mammalian heart, as the organ of circulatory force, commands our admiration.

But the ever-present, and, therefore, most essential arrangement, in all forms, is the relation of an abundant nutritive medium to the cell continually bathed by it, moving with sufficient current to wash away the products of cell activity. Our view then must be that the capillary system, in which this arrangement exists, is the most important part of the

*Read before American Therapeutic Society, May 8, 1901.

circulation, all other parts simply contributing to the perfection of an apparatus fitted to supply the needs of the capillary area; and our meaning of an efficient circulation is, the constant supply of nutritive fluid to the cells throughout the body and the constant removal of their waste products. All our discussion, therefore, must be with due regard to the capillary circulation, and our therapeutics must be adapted, first and last, to maintaining its efficiency, remembering that the capillary circulation within the heart itself is of prime importance, to the maintenance of which special reference will be made later.

One need be reminded, by mention only, of the smaller arterial vessels so highly endowed with the power of contraction and dilatation, standing in the relation of portals to the capillaries and regulating the blood supply to the latter; but the importance of these arterioles in relation to cardiac conditions, must be insisted upon. This relation amounts to the power of loading or easing the heart muscle directly, by the state of contraction or dilatation which they present; and it often becomes a potent factor in determining alterations of both the function and the structure of the heart. By their contraction, the blood is dammed backward in the arteries, blood pressure rises, and the heart is required to work against increased resistance. This condition continued may lead to hypertrophy of the left ventricle, as we see in many cases of arterial sclerosis, caused by the characteristic rigidity and loss of elasticity of the arterial walls.

On the other hand, a free dilatation of the arterioles lessens the work of the heart very decidedly by reason of the lessened resistance against which it has to act; and by inducing this condition, we may bring rest to a dilated and exhausted heart. The influence, therefore, of the peripheral circulation, and particularly the state of the capillary area, upon cardiac conditions, is very great, being capable even of determining a pathological condition, on the one hand, or an improvement of cardiac symptoms on the other.

Turning our attention to the heart itself, a more extended reference to the circulation within the structure of the heart is proper, as bearing upon the question of heart nutrition and its maintenance. It will be recalled that the coronary arteries are large as related to the size of the organ which they supply; also that their origin is close to the aortic semi-lunar valves, being the first vessels given off from the aorta. They are filled, not directly by the force of contraction of the ventricle, but indirectly, through the elasticity of the arteries, causing the rebound of the arterial blood-column against the aortic valves. With the closure of these the force of the rebound is felt primarily and in the greatest degree at the point of origin of the coronary arteries. These facts taken together explain the abundant blood supply to this organ, and as well the great capacity that it possesses of growing larger and stronger in order to meet special needs. The importance of maintaining the proper blood pressure within the aorta in all cases of cardiac disease, will at once appear.

A brief review of the nervous apparatus by which the heart is supplied, is essential to our purpose. First, let me remind you that within the heart structure itself resides the power of automatic and rhythmic motion.

The irritability of the cardiac muscular tissue, and the presence of cardiac ganglia within the organ itself, provide for this rhythmic action independent of the general nervous system. This action is controlled or augmented by nerves from the cerebro-spinal and sympathetic systems. Fibres from the vagus, which has its origin in the medulla and upper cervical portion of the cord, contribute the slowing or inhibitory influence, while the accelerator or augmentor influence is derived mainly from the cervical sympathetic. Other fibres communicate with the vaso-motor center in the medulla. The inhibitory influence slows and tends to weaken the heart's action. The accelerator influence increases the rate and force of the contractions of the heart. Therefore, stimulation of the vagus will slow the heart and conserve its energy. Stimulation of the accelerator will increase the activity of the heart, and expends, or may even waste, its energy. As we shall see later in the action of digitalis, we have a drug that at once slows and strengthens the heart's pulsation.

As essential to our primary object, that of maintaining an efficient capillary circulation, the factor of arterial blood pressure must always be prominent. But we cannot say because we have a high degree of pressure, that we have a good capillary circulation. We recognize two distinct influences that modify this pressure, the force contributed by the left ventricle and the state of the arterioles. Good heart action means a good capillary supply, provided the arterioles are not unduly contracted; but with contracted arterioles we may have a poor capillary supply though the heart may be contributing its maximal force. Indeed, does not the simple hypertrophy, attending arterial sclerosis, mean that the heart has been adding to its own power in order to maintain the capillary supply against the odds of a contracted and rigid arterial system? Here the blood pressure within the arteries has been increased from both ends—strong heart—contracted arterioles—and still we are likely in just these cases to find a poor capillary circulation which the heart is thus struggling to correct. We really are learning that the best pulse is not one of high pressure, but rather the reverse within normal limits. Our study, therefore, must include measures which serve to lower pressure by removing peripheral resistance.

The cases of actual cardiac disability that we are called upon to treat may be divided into three general classes as to cause: 1st. Valvular. 2nd. Myocardial. 3rd. Nervous.

The limits of this paper will permit consideration of the first class only. In the class of valvular cases, chief attention will be given to the circulation as a whole, rather than to the definite lesion present. These cases often give us the advantage of seeing them develop right under our eyes—i. e., during an attack of acute disease, notably rheumatism.

This permits us to apply our principles of treatment at the very outset. The necessity of absolute rest and limited diet during the acute endocarditis, in order to limit its extent and severity, need not be

emphasized. But from the first indication of endocarditis we must enforce the same directions for the sake of the future of the heart itself. We expect some deformity of valve or orifice to remain in most cases. Fortunately, the vital resources of this organ are sufficient to compensate the damage very well. Our treatment here, as always, should be to aid nature in her efforts to bring about compensation through a proper degree of cardiac hypertrophy. It stands to reason that the important indication is for rest—rest in the recumbent posture, mental rest, and the avoidance of any strain upon the heart. Absolute rest, but for how long? Here careful attention is required in order to reach the best results. We will all agree that rest should continue beyond the acute stage until the heart has fully regained its ability to do its work while the body is at rest, but this degree of compensation will not be sufficient for the upright posture and active exercise. We must, therefore, so graduate the return to activity that the compensatory process will keep pace with the demands upon the heart up to the full requirement.

Must dilatation be absolutely avoided? Let us see. Undoubtedly an increase of tension in the ventricular wall, caused by overfilling the cavity, furnishes the stimulus to hypertrophy. If so, dilatation to a slight degree is a necessary condition in order to compensation. Recognizing this, we may greatly aid in the recovery of our cases by furnishing just this stimulus through inducing or permitting the slight amount of dilatation that is requisite. We may, therefore, soon after compensation for the recumbent posture is secured, begin a series of exercises that will by very slight degrees increase the work of the heart, and through the increase of ventricular tension, furnish the stimulus to a progressive hypertrophy. These exercises should be first passive, i. e., movements of the extremities, friction of the surface and like means, by an attendant, without any effort whatever on the part of the patient; later, active movements by the patient in moderation are permitted, and later still, resistive exercises, the patient resisting by muscular effort the movements of his limbs by the attendant.

All this may be done before the patient is allowed to get out of bed. It is necessary during this course of treatment to watch the pulse rate carefully. Any considerable increase in rapidity would probably indicate a dilatation beyond the salutary degree and must be avoided. In our typical case, the pulse rate should not vary much, from the beginning of the compensatory process with the patient in bed until the process is fully completed and the patient up and about, unless the nutrition of the heart or its innervation are abnormal. As a matter of course, any general condition such as anemia should be met by appropriate remedies and careful and constant attention given to elimination by bowels, by kidneys, and by the skin. Frequent sponge baths are an important aid.

In these cases the influence of the state of the arterioles depends very largely upon the age of the patient. In young persons, without any arterial changes, their influence, as a rule, need not be seriously considered, but with persons beyond middle age, particularly with indications of arterial sclerosis, their influence becomes very decided, and it will be essential to promote a better capillary circulation by keeping them as constantly as possible in a state of dilatation. The value of capillary exercise in order to maintain good reactive power and dilatability of the arterioles, cannot be over-estimated. To this end, daily cold bathing, frictions, gymnastics, after the stage of recumbency has passed, will be decidedly conservative of the integrity of the peripheral circulation. The use of nitrites to maintain a freely patulous condition of the arterioles, may be required. Much of our success in the management of these cases will likewise depend upon the age of the patient. Naturally, the young person will have a heart possessing greater capability of compensation, while a person in advanced years will earlier suffer from diseases of nutrition of the heart structure.

What about the use of cardiac stimulants? It will be advisable, as a rule, to maintain a proper nervous tone of the whole circulatory apparatus, which may be accomplished by the use of strychnin without stimulating the heart muscle itself to any great degree, but when it comes to positive cardiac stimulants, such as digitalis, it becomes a question whether they are often indicated.

Following our line of argument, and the indications based thereon in reference to rest and graduated exercises, we would naturally conclude that in most cases nature will be abundantly able to accomplish the highest degree of cure without the aid of stimulation. The drug digitalis has doubtless been used too indiscriminately upon the first appearance of a cardiac murmur. But the clear indications for the use of this drug are to raise arterial tension by its power to stimulate the heart to more forcible contraction, and by its contraction of the arterioles. The best view to take of the use of digitalis, in my opinion, is to regard it as a whip to the heart to tide over some emergency. If, indeed, the emergency of an excessive dilatation or of general circulatory failure occur, digitalis is indicated. And, again, if our patient is beyond middle life, and the compensatory process is slow or deficient, then it may be necessary by the use of this drug to raise arterial pressure and thereby contribute to a better nutrition of the heart muscle. But in a young patient with valvular disease, digitalis, as a rule, would not be indicated except in cases of so great disability as to threaten general circulatory failure. In other words, digitalis would be indicated as an emergency drug whenever the heart seems to be losing ground, its use to be continued only until the balance returns in the heart's favor. When compensation is fully established, and the cure, as far as possible, attained, digitalis is very seldom indicated and may do harm.

Having aided our case up to the point of functional cure, i. e., perfect compensation, we dismiss it with precise directions as to future occupation, habits of life and proper hygiene; but it is difficult to dispel from our mind the feeling that the individual is constantly treading upon treacherous ground, —at least, we feel a wholesome anxiety for his future. Why? Because we know that his heart can be more easily damaged by over-exertion than before, and its nutrition more readily interfered with

by any depressing or disturbing influence or by the degenerations of age. In other words, the case more easily becomes one of the second class, or myocardial cases.

SOME NOTES ON NEW REMEDIES WITH A CASE OF POISONING BY THE DIACETYL-ACID-ESTER OF MORPHIN (HEROIN.)*

By DR. MARIS GIBSON,

of Wilkes Barre, Pa.

Almost, if not quite, as far back as we have any historical data, the sons of men have been interested in securing something to subdue pain, and probably the juice of the poppy was one of the earliest substances used for that purpose. The word *mecon*, used by Homer, referred to what we know as opium. It has been claimed by some that the word *nepenthes*, in the Odyssey, refers to this drug, but that has been disputed; the Greeks called it *opion* from opus, juice.

One of the oldest and best known preparations containing opium is the Dover's powder. Probably this mixture was first made known to the medical world in the book "The Ancient Physician's Legacy to his Country," first published in 1732, and which ran through numerous editions, that being the eighth from which Redman Coxe quotes the formula for his American Dispensatory, the sixth edition of which was published in 1825. The formula thus quoted is as follows: "Take opium one ounce, salt petre and tartar vitrolated, each four ounces, ipecacuana one ounce, liquorice one ounce. Put the salt petre and tartar into a red hot mortar, stirring with a spoon till they have done flaming, then powder them very fine, after that slice in your opium, grind these to a powder, then mix the other powders with these. Dose, from 40 to 60 to 70 grains in a glass of white wine posset, going to bed, covering up warm and drinking a quart or three pints of the posset while sweating."

Redmond Coxe requests his friends to prepare Dover's powder according to this formula, and acquaint him with the results of its use. He further suggests that a comparative experiment be carried out to ascertain the relative value of this powder, and that prepared by his formula, which is the same as that which we use now, except that the last Pharmacopeia directed sugar of milk instead of sulphate of potassium.

It would seem that the question of too large doses was raised in Dover's own time, for he says:

"This notion of theirs proceeds entirely from their ignorance, and from the want of knowing the nature of these ingredients that are mixed up with it, for they naturally weaken the power of the opium." He also says that certain apothecaries advised his patients to make their wills before they took these large doses, but he says "monstrous as this may appear I can produce the proofs that a patient of mine took no less than 100 grains, and yet appeared abroad the next day;" and further, while this book was published in London in 1732, a book called the New Dispensatory, claiming to be a translation of the London and Edinburg Pharmacopeias, and also published in London in 1753, makes no mention whatever of Dover's powder.

About two months ago a man about 40 years of age, not a resident of this city, but at that time doing some work here, was found by a person who knew him, wandering aimlessly on the street not looking well, but not doing anything to attract the attention of people passing by. He told this person that he was sick and had taken an overdose of medicine. He was then taken to the office of a physician, who was out at the time; another physician was called, who was told by him that he had taken what was probably an overdose of heroin, and gave him a vial containing a white powder. The physician gave him a dose of atropine and took him in a carriage to the house of a friend where he and his wife were visiting, with a great deal of trouble, as he became worse on the way, said he could not breathe, and did several other things. Having reached this point another physician was called, who at once telephoned me the history of the case, and to come at once in the carriage he was sending, and bring a stomach pump. Heroin is a strictly new drug; there is nothing at all definite about it in the books; I had used it somewhat as a cough medicine in small doses. I found in one book that it was insoluble in alkaline mixture, and, with the stomach pump, hurried to the case and found the patient sitting in a chair, pulse nearly normal, respiration slightly hurried, pupils moderately dilated, had vomited freely by drinking mustard water, did not know anybody, except that he appeared to have a hatred toward his wife; either he did not hear, or, for some cause, did not answer anything; appeared dazed and restless, looking around and about himself in an unnatural way. We did not use the stomach tube as it appeared that his stomach was empty, but gave him some sub-carbonate of soda. We decided to put him to bed. When we took hold of his arms and raised him up. He could walk rather feebly and could hardly get upstairs; his knees were weak. He lay down when the bed was reached but was restless; tried to get up several times, but was easily persuaded to lie down; afterward became more quiet, and after some hours fell asleep; by evening he was in fairly good condition, and was out in a day or two. He had told the first physician where he bought the medicine, and he found out that he had been furnished with ten grains of heroin in a vial without label or any indication of its character or dose whatever. The patient had said, before he became unable to talk, that he poured out of the vial what he thought was a dose and took it. By weighing what was still in the bottle it was found that he had taken three grains of heroin. After his recovery he stated that he had been somewhat in the habit of taking morphin for a very painful affection of the bladder, and had, for a time, taken large doses; that his physician in another town had prescribed heroin instead, and he had several times taken that; also that on this occasion, just before and just after, he had taken two or three large drinks of gin and a big drink of brandy.

Now several questions come up: Did he take the large dose of three grains of heroin? Did the alcohol he had taken produce the greater part of the symptoms? Was the heroin removed by the emesis? A white powder was mixed with what he vomited.

As stated before, heroin is a new medicine. Very little is said of it in any of the books. Cushny says only "heroin or diacetyl morphin resembles codein in its effects, but has a stronger action on the respiratory center, and has been advised for cough." This patient had some symptoms of codein poisoning. Hare, in his last edition, says: "Heroin is the diacetyl-acid-ester* of morphin, and is a white powder, crystalline, without odor and with a slightly bitter taste. Unlike morphin its effect on the respiratory center is stimulant rather than depressant when given in medicinal doses. The dose is one-twelfth to one-sixth grain three times a day. It is said to

*Read before the Luzerne County, Pa., Medical Society, October 17, 1900.

*An ester is any compound ether in which both an alcohol radical and an acid radical are present.

be of value in uremic dyspnœa." By far the greater part of the literature of this drug is still found in the advertising matter of the chemists who make it and sell it.

Passing by cocain, so satisfactory as a local anesthetic, except for the serious conditions sometimes arising from its use, and the very unfortunate effects following its habitual use, and eucain which has some drawbacks with all its good features, I will mention two other substances that are still in a semi-embyronic stage, which are used for the same purpose. I refer to orthoform and nirvanin; these are essentially the same; the first being advised for external local anesthesia, while the second is orthoform prepared for hypodermic use. According to Cushny, orthoform is the methyl-ester of amido-oxy benzoic acid. Such combinations belong to the aromatic series, and all have a benumbing action on animal tissues, but are entirely distinct from cocain. This has been largely used during the last year or two in surgical work to obtund the sensibility of the tissues in dressing wounds, abrasions, ulcers, burns, etc. It is very slightly soluble in water and is used as a dusting powder or in ointment. Our Dr. Wetherby has published a paper on its use in hay fever. It has been given internally in cancer of the stomach and other painful affections where its local action can be made available. It is somewhat antiseptic. In some cases it produces great irritation to the skin, even in weak ointments, and has produced poisoning when given internally.

The usual form of ointment is two drams to the ounce of lanolin. Lilienthal, in the book "Imperative Surgery," advises the use of orthoform gauze in treating boils and hemorrhoids.

It was found that orthofrom, when applied to the tissues, did not extend its anesthetic influence beneath the surface and it was much too irritating for hypodermatic use. So the German chemists worked out a modified substance and called it nirvanin; this is too new to be in any of the standard books, but has an abundant literature in the form of advertising circulars. I suppose the name is taken from Nirvana, a condition of perfect peace and rest and freedom from everything that belongs to earth or flesh or time, the highest goal to which the Buddhist aspires. Nirvanin is the hydrochlorid of diethyl glycocoll amido oxybenzoic-methyl ester, a white crystalline powder very soluble in water, anesthetic and antiseptic. It will produce anesthesia in non-inflamed muscular tissue lasting several minutes when injected in one-tenth to one-fifth per cent. solutions in distilled water. In abscess and other painful conditions a stronger solution, as one-third to one-half per cent., and up to two per cent. and three per cent. It is claimed to be only one-tenth as toxic as cocain. A one per cent. solution prevents bacteriological growth, fermentation and putrefaction. Its injection is not painful beyond the prick of the needle. Operations numerous and various on the eye, nose, throat, muscular tissue, bones, rectum, have been done under nirvanin anesthesia. As time goes on these two preparations will be further proved, and if they do not develop some untoward action will be a large acquisition to our means of removing pain.

THE PHARMACOLOGY OF IRON; WITH ESPECIAL REFERENCE TO A NEW COMPOUND OF IRON.

By ALBERT C. BARNES, A.M., M.D., and H. HILLE, Ph. D., of Philadelphia.

The startling announcement made by Bunge some years ago that inorganic iron is never under any circumstances absorbed by the normal epithelium of the intestines, stimulated an immense amount of experimental research from which we have learned much concerning the absorption of iron, its function after absorption, and its ultimate fate in the tissues. Bunge's theory, long since disproven, has indirectly shed much light upon the very practical question of the clinical value of iron.

Concerning the necessity of iron for tissue life, Cushny tersely expresses the consensus of authoritative opinion in the statement that "iron is essential to the life of many, perhaps all, forms of protoplasm." This iron, like all other tissue element, is, to a certain extent, daily eliminated in the excretions; the manner and quantities in which it is eliminated have been accurately determined by the investigations of Gottlieb, Bunge, Cloetta and numerous other observers. It is now an established fact that the loss of iron from the tissues in conditions of health, is re-supplied by the food in which the iron occurs chemically combined with highly organized complex albuminoid bodies. This iron exists in organic combination, i. e., it is not dissociated from its supposed direct combination with the carbon atoms when the iron body is brought in solution and tested with reagents which yield the characteristic tests with inorganic iron. Elaborate investigations have definitely established the chemical nature of these iron-bearing compounds of the food stuffs. Bunge showed that they belong to the nucleo-proteid class of bodies and furthermore isolated one of these iron compounds from the yolk of an egg. Similar iron and phosphorus-bearing compounds have been isolated from many other food products by numerous physiological chemists. Hammarsten states that the food products as a class "contain traces of iron." Fresh meat contains, according to the extensive analyses of Katz, on an average of 0.04 per cent. of iron. Concerning the function of these iron compounds of the food products there is unanimity of opinion: Schmiedeberg states that they are "undoubtedly the blood-forming combinations of the food stuffs" and that "they are comparatively easily absorbed."

The course of iron after absorption is now well known: It is absorbed from the duodenum only (Hochhaus and Quincke) or from still lower portions of the small intestines (Cloetta), passes through the lymph channels to the blood, first stored temporarily in the spleen, then transferred by the blood to the liver, where it is stored as a ready reserve stuff to be drawn upon by the blood as the system requires iron to replace that which is daily excreted. Inorganic iron is, as shown by the recent investigations of Müller unquestionably absorbed, but it has, in no matter what form exhibited, certain local disadvantageous effects upon the gastro-intestinal mucous membrane; it must, moreover, be synthesized by the human organism into the higher complex forms of organic iron as they exist in the human tissues. The question of the chem-

ical form in which iron occurs in the human tissues should act as a guide concerning the clinical problem as to how best to get iron into the organism with the least expenditure of energy on the part of the physiological forces. In the liver, for instance, the iron-storage-house of that body, the form in which iron occurs, is well known. Hammarsten represents the present-day opinion on the subject in the statement that "the iron exists in by far the predominating quantities in the liver as the iron-bearing proteid substances." St. Zaleski was the first to discover these iron proteid compounds in the liver, and Spitzer found the same bodies in the kidneys, testicles, and muscles. Schmiedeberg, Halliburton, Bunge and Hammarsten have succeeded in isolating various complicated iron-bearing proteid compounds from practically all the tissues; hemaglobin belongs to this general class. The relationship in chemical nature and interchangeability between the iron-bearing compounds of the foodstuffs and those of the human tissues is proven beyond a doubt; the adaptability of the food-irons to ready absorption and conversion into the forms required by the tissues is universally conceded. Working upon this basis, the writers have endeavored to produce a synthetic iron compound that would correspond in chemical structure to that of the food irons and which, like them, would not undergo the usual fate of all inorganic and so-called organic iron compounds when introduced into the stomach and there acted upon by the gastric juice. When what is designated inorganic iron, such, for instance, as carbonate, lactate, phosphate, enters the stomach, it is converted by the gastric juice into iron chloride and iron albuminate. This, as has been unquestionably proven, is likewise true of the much employed iron peptonate, and the iron chloride thus formed is either astringent or corrosive to the gastric mucous membrane; this fact explains the digestive disturbances frequently observed after the administration of iron. The writers found that by the action of nucleinic acid upon albumen there results, under certain chemical and physical conditions, a new body which, analysis shows, belongs to the nucleo-proteid class of compounds. This nucleo-proteid may then be so treated chemically that it forms a ferric salt which contains ten per cent. of organic iron. This new iron compound occurs as a reddish-brown powder, insoluble in water and acid solutions, and which does not precipitate albumen, pepsin or peptones. It has the chemical formula C_{975} H_{1555} N_{250} S_5 P_6 O_{315} Fe_{42}, and corresponds, in chemical constitution and behavior towards reagents, with the iron-bearing proteid compounds of the foods. This synthetic iron nucleo-proteid does not, like the inorganic salts of iron and iron peptonate or albuminate, yield a black precipitate with ammonium sulphide. On the contrary, it behaves like the organic iron of the food stuffs, that is, it does not yield appreciate with ammonium sulphide, but reacts but tardily to this and similar reagents; this fact proves that the iron exists in what is known as "masked" form. When it is brought into alkaline solution, the subsequent addition of 0.2 per cent. hydrochloric acid (corresponding in acidity to the gastric juice) cause no precipitation of the iron compound from the solution. This characteristic, together with the fact that the iron compound does not precipitate pepsin or peptones, indicates that it should be free from deleterious influences upon the gastric mucous membrane and the processes of digestion and should present to the absorbing surface of the intestines the kind and chemical form of iron required by the tissues. This new iron-bearing nucleo-proteid is already in the complicated synthetic form, which is most readily assimilable and ready to be stored in the liver as a finished reserve stuff.

Absorption Experiments.

In order to determine the relative assimilability of inorganic iron and organic iron as represented by this iron nucleo-proteid, the following experiments were conducted: Three puppies of the same litter, five days old, were separated from their mother and fed exclusively on milk by means of a nursing bottle. As is well known, "young animals of the same litter fed exclusively on milk have approximately the same amount of iron in the liver" (Cushny). One of these three puppies was kept as a control animal and received only milk. To the second puppy, in addition to milk was given iron nucleo-proteid, and to the third puppy, iron lactate was administered. All three dogs were kept under exactly the same living conditions and received equal quantities of milk at the same intervals. In order to make the quantities of iron administered mathematically identical, the proportion of elementary iron in each compound was accurately determined and the requisite quantity of each iron preparation administered. The experiment was continued nine days; on the fifth day the normal animal receiving no iron died, but this does not in the least modify the results of the experiments. At the beginning of the tenth day the two puppies which had received the iron preparations were killed by ether and the liver from each removed. The amount of iron in each liver was carefully determined by three separate analyses. The liver of the dog which had received the iron nucleo-proteid contained one hundred and two per cent. more iron than the liver of the dog which had been given the iron lactate. These experiments admit of no other deduction than that more of the iron nucleo-proteid is absorbed than the least irritating of the inorganic salts of iron. In the light of our present-day knowledge of the scientific facts concerning the pharmacology of iron, it is fair to presume that the most rational way to get iron into the system is to administer it in such a form that it reaches the absorbing surface of the duodenum in as near as possible the chemical forms required by the tissues and in which forms it is free from deleterious influences upon the gastric mucous membrane.

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BIBLIOGRAPHY.

1. Cushny. Pharmacology and Therapeutics, 1899.
2. Schmiedeberg: Arzneimittellehre, 1895.
3. St. Zalenski Zeitschrift fuer Physiol. chemie. 10.
4. Cloetta, Archiv fuer Exper. Pathol. und Pharmakol. Bd 44.
5. Gottlieb Ibid Vol. and Zeitschrift fuer Physiolog. chemie 15.
6. Bunge, Ibid IX, 17.
7. Hochhous and Quincke, Archiv fuer Exper. Pathol. and Pharmakol. 37.
8. Mueller Therapeut. Monat, Mar. 1901.
9. Spitzer, Pfueger's Archiv 60 and 67.
10. Nasse, Maly's Jahresber. 19.
11. Woltering, Zeitschrift fuer Physiol. Chem. 21.
12. Hammarsten Ibid 19.
13. Schmiedelberg. Archiv fuer Exper. Pathol. and Pharmakol. 33.
14. Halliburton Jour. Physiol. Supplement 1892.
15. Dostre and Floresco Archiv de Physiol. 10.
16. Guillemonat and Tapicque Comp. Rend de Soc. biol. 48.
17. Katz. Pflueger's Archiv 63.

THE USE OF THE AQUEOUS EXTRACT OF THE SUPRARENAL CAPSULE IN DISEASE OF THE EAR.*

By W. H. BATES, M. D.,

of New York.

The aqueous extract of the suprarenal capsule when properly used improves the hearing (and tinnitus) of most cases of deafness. Its action is temporary and other treatment is usually necessary to obtain permanent benefit.

The cases relieved include those with symptoms of anchylosis of the stapes and beginning nerve deafness, patients who hear better in a noise as well as those who hear better in a quiet place; those in which bone conduction for part or all of the Hartmann's series of tuning forks is better than air conduction, and also those in which the reverse is true. The extract has extended the upper tone limit as well as the lower tone limit. The remedy has improved the hearing of cases not benefited by politzeration, the removal of adenoids and treatment of the nose. After six years' use of the extract I have not seen a case of deafness from otitis media which was not improved by it.

The effects of treatment by suprarenal extract indicates the direction of further treatment. For example: (1) Some cases of otitis are benefited by nasal treatment, while others are not. If, after a hypertrophy of the middle turbinated has been reduced by suprarenal, the hearing is temporarily improved, one may expect permanent benefit by removal of the hypertrophy by surgical measures. The reverse may also be true, and I have not benefited the hearing by removal of hypertrophies in the nose when the previous use of suprarenal was not followed by temporary improvement. (2) The removal of adenoids may become a question for decision. Should the hearing be improved or the tinnitus temporarily lessened by contracting this tissue with the extract, permanent benefit may be expected after its removal by surgical measures. (3) Again, in cases with absence of part or all of the membrana, the hearing may or may not be improved by local measures, such as the incision of adhesions or the use of caustics. As my experience becomes more extensive, I depend more and more upon the immediate effect of the extract for the indication for local treatment. If treatment by suprarenal extract improves temporarily, one may expect permanent benefit by judicious treatment, while on the other hand local treatment in my hands has failed to relieve when the use of the extract locally has not been followed by immediate temporary benefit.

The extract is a valuable adjuvant. Patients not benefited by politzeration are improved by this method of inflation after the use of the extract. Treatment of the naso-pharyngeal space may not be followed by improved hearing until suprarenal has been added to the treatment. In purulent cases local treatment with antiseptics becomes more efficient after the use of the extract.

The local treatment of otitis with suprarenal may not be beneficial in lithiasis, gouty deposits or syphilis until general treatment has improved the patient's health.

As a hemostatic in operations on the middle ear under cocain anesthesia the extract renders good service. So efficient is it that even the removal of the drum membrane and ossicles has been accomplished with its aid without hemorrhage. It is a valuable hemostatic in controlling oozing of blood during the mastoid operation. One must apply it to the bleeding surface, and this is accomplished by washing away the blood clots with the suprarenal solution syringed into the wound. It may be used freely without harm.

Shock after prolonged ear operations is relieved by suprarenal extract. I have seen a patient with mastoid abscess and cerebral symptoms, under a general anesthetic, who was apparently dying of heart failure, revived at once after ten drops of suprarenal solution was placed on the tongue. The pulse became weak and 40 to the minute. The family physician stated that after the suprarenal solution was administered, the pulse became strong, 60 to the minute, in less than 30 seconds.

Preparations.—For local use a solution is prepared by mixing one part of the dried gland with ten parts of water. The solution stands a few minutes and is then filtered. The filtrate is ready for use. When properly prepared, one drop should blanch the conjunctiva of a normal eye in less than one minute. The solution can be sterilized without losing its efficiency. Armour & Co. have prepared for me a sterile solution from the fresh gland which is very satisfactory.

Let me repeat what I have said before so many times: Do not mix any other substance with suprarenal extract in solution. Antiseptic solutions do not preserve it. The suprarenal principle is so active chemically that even the presence of air in the solution lessens the efficiency of the extract.

Administration.—So much depends upon the method of administration that I shall describe the process with more detail than this part of the subject seems to warrant. Failure to benefit follows when the local application of the extract is made roughly or in such a manner as to cause discomfort. The utmost gentleness is requisite to success. Three methods are practiced:

1. Locally to the eustachian tube.
2. To the tympanic cavity.
3. Internal administration.

1. *Locally to the Eustachian Tube.*—The least irritating way to apply the suprarenal solution to the eustachian tube and its vicinity is to inject it with a glass pipette having a small nozzle into the punctum of the lower lid, down the nasal duct, and with the patient's head tilted back, the solution flows over the orifice of the tube into the throat. This procedure is repeated a number of times, until the parts are blanched or until the hearing no longer improves. One may use ten minims six times and oftener with benefit within half an hour.

The solution may be applied with a spray through the nose or by means of cotton wet with the solution on a bent probe. I have been unfortunate in my use of sprays, and seldom have improved the hearing by their use. With the cotton swab, provided the

*Read before the Third Pan-American Medical Congress, February 28 1901, Havana, Cuba.

patient's nose was not irritated, the hearing was more often benefited. The eustachian catheter is useful in applying the suprarenal solution to the orifice of the eustachian tube, and the results are good, but no better than by some other methods. It is not necessary to inject the solution through the eustachian tube into the tympanic cavity. The solution may also be applied by a swab passed up behind the palate to the eustachian tube and the hearing improved.

Sometimes the hearing is lowered by opening the nasal chambers with suprarenal extract. As this effect follows when the nose is opened by cocain or by counter-irritation over the epigastrium, I do not believe that the extract is itself injurious in these cases.

2. *To the Tympanic Cavity.*—The solution may be syringed into the tympanum through an opening made in the drum membrane with a tympanic syringe. If the solution be irritating, the hearing may not be improved. When a part of the membrana is destroyed, the solution when applied directly to the tympanum may improve the hearing. Tinnitus is occasionally relieved. This method is seldom beneficial.

3. *The Internal Administration.*—Some cases are very much benefited, but many are not. It is an uncertain method. Five grains of the powder are placed on the patient's tongue, chewed and swallowed without water. Three minutes later, if a decided improvement is noted, one may expect gratifying results from this method of administration. If, however, no immediate benefit follows, further use is disappointing. It should be given after eating as nausea and vomiting have followed its administration on an empty stomach.

The internal administration is valuable in preventing and relieving "colds" or acute exacerbations of chronic otitis. I have patients who have used it daily for years with benefit.

Acute Catarrhal Otitis.—The suprarenal extract applied locally to the eustachian tube has been followed by permanent relief. The remedy was applied frequently for half an hour until the tube was freely open and the tympanum blanched. Deafness and tinnitus when recent and due to acute congestion are at once relieved. Subjective symptoms of fulness in the ear or pain are usually benefited.

Subacute cases in which the inflammation has continued two weeks or longer are improved to a less degree. Suprarenal is a valuable remedy to use with other treatment in these cases.

Chronic Catarrhal Otitis.—With the aid of suprarenal extract obstinate cases of deafness from chronic dry catarrh of the middle ear, not benefited by the usual methods of treatment, have been cured. The extract alone never improves the hearing in these cases permanently. Other treatment is necessary. In one patient the watch was not heard. Bone conduction was better than air conduction for C, C_1, C_2, and C_3. Five minutes after the extract was syringed down the nasal duct, the eustachian tube was blanched and the drum membrane was less congested. The patient heard the watch, air conduction, C_3, was better now than bone conduction. Nitrate of silver was applied to the vault of the phalanx. Two days later the hearing was still improved. This treatment was continued three months and the hearing for the watch, conversation, and all the tuning forks became normal.

Purulent Otitis.—The congestion of the eustachian tube is relieved temporarily by the local application of the aqueous solution of the extract. The lumen of the tube is opened and pus drains into the throat from the tympanum. The local treatment of the faucial opening of the eustachian tube is followed by an anemia of the membrane and tympanum. Brilliant results are usually obtained in acute cases.

In chronic cases the beneficial results obtained with suprarenal to the congestion and hearing require the employment of other treatment, either to remove polypi or necrosed bone before a final cure can be obtained. Granulations are whitened and very much contracted by the extract, so that caustics act more efficiently. The congested tissues are contracted and cavities opened for the entrance of antiseptic or other fluids.

Conclusions.

1. The aqueous extract of the suprarenal capsule improves the hearing of otitis media temporarily.
2. Permanent benefit follows after the use of other treatment.
3. The extract is the most valuable known remedy for deafness.

SUB NITRATE OF BISMUTH AS A REMEDY IN OBSTRUCTION OF THE BOWEL.*

By H. M .SHALLENBERGER, M. D.,
of Rochester, Pa.

The therapeutics of the sub-nitrate of bismuth are so limited in the text-books, and the drug plays so unimportant a rôle in the hands of the profession generally, that I am at once ready to concede a natural incredulity in your minds at the mention of this agent as a remedy in such a condition. I am free to confess that the results following its administration in the first cases of bowel obstruction, were looked upon as pure coincidences, and that this paper is now written after a lapse of more than fifteen years since the treatment of the first case. This period, however, includes in it quite a large number of cases, at ages ranging from four to sixty-five years, and the fact that the obstructed bowel has, in every instance, been relieved within 48 hours following the initial dose of bismuth, has prompted me to call your attention to-day to my experience with it in this condition. Every physician naturally chooses a drug out of a class to meet a given disturbed action or disease, and early in my practice I was led to use large doses of the sub-nitrate of bismuth for almost all forms of gastric irritability. The association of the bismuth with my first case of obstructed bowel was due to its being prescribed for the persistent churning of the stomach and vomiting that was a marked feature. I have chosen the few succeeding cases by way of illustration:

CASE 1.—Harry H., aged 4 years. Was called in consultation after the boy had been given cathartics and enemata fruitlessly for three days. The tumor was well marked in the colon above the sigmoid flexure, and there was persistent and violent vomiting at regular intervals. I ordered fifteen grains of the sub-nitrate of bismuth every hour for six hours, and as the vomiting was controlled the intervals of administration were lengthened to two and

*Paper read at a joint meeting of the Beaver and Lawrence Co. Societies, at Ellwood, Pa., July, 1900.

three hours. The day following, the mass was noticeably reduced in size, the fecal matter began to pass away and continued to do so.

CASE 2.—Bessie P., aged seventeen years. Persistent impaction of the bowel for three or four days. Cathartics had been used freely. She was given thirty grains of subnitrate of bismuth every hour, and later every two hours. The mass softened on the second day, bowels were easily moved by salines and enemata.

CASE 3.—Henry M., aged nineteen years. Was seen in consultation by my father, Dr. A. T. Shallenberger. The boy had been ill for several days with pain and swelling in the bowels. The bowels had not moved for at least one week. Castor oil, croton oil, various other cathartics as well as enemata had been given daily. A large firm tumor of fecal matter along the line of the transverse colon was clearly defined. Was ordered thirty grains of bismuth every hour, and, after eight or ten hours, at intervals of two hours. After forty-eight hours there was a gradual disappearance of the tumor and action of the bowels.

CASE 4.—Mrs. P., aged sixty-five years. Well defined fecal mass in the cecal region. Vomiting and no action of the bowel. Castor oil and other cathartics had been used. Obstruction removed and free action of bowels secured after twenty hours treatment with the powders of bismuth.

CASE 5.—J. W., aged thirty-five years. No action of the bowels for about one week. Had been using all manner of cathartics. A well marked tumor in the colon was found. After two days persistent use of large doses of bismuth the tumor softened and the bowels moved.

These five cases will serve to make clear the conditions existing, and the relation that the bismuth sustained to the medication. You will notice that cathartics or enemata had either singly or conjointly been used in every case, in some instances for a period of nearly one week, and that within two days following the giving of the bismuth, as I have said, there was a movement or disintegration of the fecal mass.

What does the bismuth do in these cases? In its limited place as a therapeutic agent, it is classed as a sedative, and has for years been feebly recommended in five-grain doses as of possible benefit in irritable conditions of the stomach. My observation is that we have in this drug a remedy that stands very high in the treatment of all congestions and inflammations of the gastro-enteric tract, and that practically the dose cannot be too large, provided the bismuth is free from adulteration.

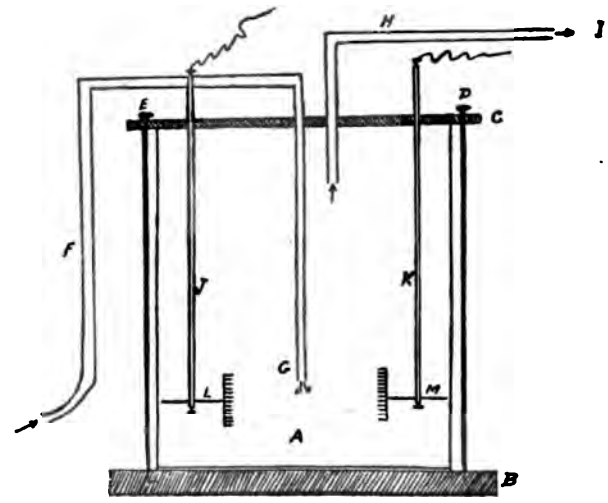
In all conditions of impaction, after a few hours, an irritable state of the bowel is set up contiguous to the mass, owing to the action of the circular fibres in the muscular coat of the bowel in their vain attempt to produce a natural peristalsis, and the irritability is followed by a contraction or spasm about the obstruction, just as a pocket of gas may be held in colic. The use of saline waters, cathartics, or enemata, while clearly indicated to soften the plug and aid in its movement, are thus hindered and their action defeated, so long as this unnatural contraction continues. The sedative effect of bismuth on the terminal nerves should be impressed on the coats of the stomach and bowels alike, provided the doses are sufficiently large and long enough continued to come in contact with the entire tract. If this be true we can believe that the bismuth allays the irritated bowel, relaxes the spasm, and in this way removes resistance to the passing of the accumulated feces. The administration of the bismuth does not in any way set aside the giving of, or need for, purgatives. In some cases, however, I am quite sure that the bismuth alone is all that is necessary in the way of medication: that is, if the tendency to contraction or spasm of the bowel is guarded against, that nature will easily move the mass. There is no reason why the laxatives and enemata also, if regarded essential, should not go hand in hand with the bismuth treatment. I now make it a rule to order for these cases the continued use of a saline water, but see to it that from the first, at least 30 grains of Squibbs sub-nitrate of bismuth is given at short intervals and continuously, until there is an impression made on the fecal tumor.

A PRACTICAL OZONE GENERATOR ACTUATED BY THE X-RAY INDUCTION COIL.

By THOS. S. BLAIR, M. D.,
Electro-Therapeutist, Harrisburg, (Pa.) Hospital.

The increased emphasis recently placed upon local treatment in pulmonary difficulties has induced the writer to experiment along the line suggested by the well-known fact that ozone can be produced more free of irritating chemical contamination than can any other efficient gas or vapor suitable for inhalation as an antiseptic and curative agent.

Most of the ozone generators in use either liberate the agent in insufficient volume or the chamber of ozonized air, having no ventilating mechanism, the respired air of the patient is breathed over again. These difficulties are overcome in this device:



A.—Large Battery Jar.
B.—Round Wooden Base.
C.—Round Wooden Top Fitted with Rubber Packing on Under Side to Seal Jar.
D., E.—Metal Rods with Thumb Screws to Bind Top.
F.—Glass, Metal or Rubber Tubing From Source of Air Supply and Discharging at G.
H.—Outlet, Discharging at I.
J., K.—Metal Rods with Binding Posts to Receive Wires From Secondary Terminals of Coil.
L., M.—Adjustable Brushed Spark Gap.

The above-figured cross section illustrates the construction. An efficient spark gap may be as low as two inches and from that up to ten. The supply of air should not be too great, the supply pipe not being over ¾ inch inside diameter. At the Harrisburg Hospital, the source of supply is a small direct pressure blower driven by an electric motor and forming part of an Edison break wheel X-ray outfit. Any air tank or pump may be used, as a powerful blast is not required. The expense of making a generator is not at all large. The percentage of

ozone in the discharged air depends upon the rate of discharge from greater or less air pressure, rapidity of interruption in the primary circuit of coil, and the length of spark gap. A glass discharge tube is best and may end in a flared inhaler or a small nozzle, according to the use made of the generator.

In operation any reasonable percentage of ozone can be discharged, provided a powerful coil can be used. It is well to start the coil first and permit the air in the generator to be well ozonized before any is discharged. A static machine may be used in place of a coil. The amount of ozone liberated can be judged by the rapidity with which strips of blotting paper soaked with a solution of iodide of potash are blackened or reddened when held near the discharge tube.

The therapeutic uses of the generator suggest themselves. The writer finds that the ozonized air may be breathed freely without discomfort or irritation, and that, from a small nozzle, it may be discharged with considerable force into the throat, the nasal tract, or into a suppurating cavity, with none but good effects. In suppuration, its action is probably only superficial, however, but may be efficient conjoined with alternate douching. It does not burrow as does hydrogen peroxide, however. The writer considers the apparatus useful in the treatment of various pulmonary, throat, nasal and catarrhal difficulties and as a sterilizer. There have no bacteriologic tests been made, however, nor any technique perfected. Possibly there is also a field for it in sterilizing the abdominal and other cavities under certain surgical exigencies, purifying the air of a ward, sterilizing water and dressings and in certain chemical operations.

So far as the writer is concerned he is not prepared, as yet, to make any sweeping claims for the device, but it does generate an abundance of ozone in a practical way, and he trusts that others may be led to experiment with the method in the clinical field.

218 Locust street.

Treatment for Ivy Poisoning:

℞

Ichthyolis	50
Aquæ	ad 100

℞

Bromini	gr. xv
Olei olivæ	f. ʒ i
	(Brown.)

℞

Acidi carbolici	f. ʒi
Glycerini	f. ʒss
Zinci oxidi	ʒss
Liquoris calcis	q. s. ad Oi
	(Grindon).

℞

Zinci sulphatis	ʒi
Aquae	f. ʒii ad
	(Hardaway).

℞

Ext. grindeliæ robustæ fluidæ	f. ʒ i
Aquae	ad f. ʒi ad
	(Van Harlingen).

Abstracts of Therapeutic Literature.

Lauder Brunton on: "Some Practical Points in the Medical Treatment of Disease."—(*The Polyclinic*, May, 1900). In discussing disorders of the stomach, the selection of readily digestible food, and the efficient use of the teeth were pointed out as a means by which the work of the stomach could be assisted. Further, the secretion of the gastric juice can be stimulated by the administration, before food, of sodium bicarbonate in combination with a bitter tonic, and its digestive function can be supplemented by pepsin and other digestive enzymes given after meals. It has also to be remembered that the power of the gastric juice is diminished by dilution, and hence, in patients with feeble digestion, fluids should not be taken with, or immediately after, food, but should be postponed for two hours or so—that is, until gastric digestion is fairly complete. In atonic dyspepsia, the stomach often has difficulty in emptying itself on account either of dilatation or displacement altering the relation of the body of the organ to the pyloric opening. Muscular force is, under these circumstances, needed to carry the food upward along the displaced great curvature to the pylorus, and the stomach is often unequal to the demand. This position may be met by causing the patient to lie down for a time after each meal, or by prescribing a flannel binder for the abdomen, and the contractile power of the muscular layers of the stomach-wall may be stimulated by the administration of strychnine and dilute nitrohydrochloric acid. In cases where there is much abnormal fermentation in the stomach contents—as is so apt to occur in gastric dilatation—antiseptic remedies are called for, but their administration must be preceded by washing out the stomach, otherwise the remedies will fail in consequence of the considerable volume of the stomach contents.

The severe pain which attends gastric ulcer can often be successfully treated by sodium bicarbonate ordered in large doses. A teaspoonful of the salt should be dissolved in water, and this should be sipped at short intervals until pain is relieved. To avoid any possibility of the soduim bicarbonate softening the mucous membrane and so increasing the risk of hemorrhage or perforation, limewater instead of plain water may be used as the solvent, and the astringent tendency of the lime may be neutralised by the addition of fluid magnesia.

In the treatment of chronic diarrhea it is wise to remember the sensitiveness of the intestine to change of temperature, and many cases in which astringents fail will promptly amend when an abdominal belt made of flannel, or still better of chamois leather, is worn. In very obstinate cases of chronic diarrhea, or in cases where periods of constipation alternate with periods of diarrhea, and the stools contain much mucus as a result of catarrh of the colon, useful remedies are copper sulphate (one-third to half-a-grain) and castor oil. Ten minims of the oil in mucilage, or the same quantity with one minim of tincture of opium in a capsule, may be ordered thrice daily; should this not succeed, castor oil in drachm doses should be given every morning. The relations of intestinal disturbances to the liver, depending, as this does, upon the fact that the blood passing from the intestine passes for the most part through the portal circulation is of great importance. The liver is an organ especially susceptible to the influence of chill, and thus its circulation and functions may readily be disturbed by damp or draughts acting on the feet, legs, or other parts of the body. Patients often complain of digestive disturbances which arise entirely apart from dietetic indiscretions, and the explanation frequently is the one just stated. Here again the application of an abdominal belt is most serviceable; the best combination of remedies is five grains of blue pill taken at bedtime followed by a draught of compound senna mixture in the morning. The same medicines will cure cases of chronic diarrhea in which the intestinal disturbance depends upon a disordered condition of the hepatic circulation.

The next subject dealt with was the treatment of hemorrhoids. To gain the advantage of rest it is well if possible to cultivate the evacuation of the bowel at bedtime rather than in the morning. The prolapsed hemorrhoids can then be returned with the certainty that the recumbent position will allow them to remain within the sphincter. In this way freedom from pain and irritation for

some hours is secured. Careful and thorough washing of the parts after each defecation is of the first importance. Astringent remedies are of great value. An injection of ʒii of tincture of catechu in ʒii of water or an ointment consisting of equal parts of gall and opium ointment and vaseline cream with one per cent. of cocaine is a useful application for introduction into the rectum. The astringents act beneficially on the hemorrhoids and on the prolapse of the mucous membrane into the rectum which frequently accompanies piles.

Cardiac diseases afford perhaps one of the best illustrations of the value of rest as a remedy. In these, indeed, rest is *sine qua non*. But strychnine to stimulate the heart and digitalis to increase its power, occupy a high position as therapeutic agents. It must, however, be borne in mind that valvular disease may be accompanied by fatty or other degenerations of the cardiac muscle, and that the remedies just mentioned contract the arterioles and so increase the resistance of the peripheral circulation. Hence in some cases of heart disease strychnine and digitalis may aggravate rather than relieve the patient's condition. The indication under these circumstances is to associate them with remedies which relax or dilate the arterioles, such as sweet spirit of nitre, nitro-glycerine, or erythrol nitrate. The cardiac force is then increased without the production of undue arterial resistance, and thus the efficient circulation of the blood is promoted. In the treatment of cardiac dropsies the combination of digitalis with blue pill and squill is often of service, and it may be necessary to give this in increasing doses until the influence of mercury on the gums is appreciable. This may be quoted as an illustration of a general doctrine that to get the best results from many remedies—and it is especially true of mercury—it is necessary to push them in doses of gradually increasing power. [T. L. C.]

For Mosquito Bites.—M. Manquat (*Bulletin General de Therapeutique*) recommends the following solution to relieve the irritation of mosquito bites: Commercial solution of formic aldehyde (at 40 per cent.), 5 grams; alcohol (at 90 degrees proof) and water, each 10 grams. Apply several times during fifteen minutes and allow it to evaporate. It can be applied with blotting paper soaked in it. M. Manquat thinks it destroys the virus, or parasites, of the bite. The solution is caustic and should not be applied on delicate parts of the skin or places where the skin is gone. Tincture of iodine, and also a 10 per cent. solution of menthol in water or eau de cologne, are also recommended for the same purpose. [T. L. C.]

Randolph Brunston (*Jour. A. M. A.*, May 11, 1901) discusses the **rational use and limitations of therapeutic measures intended to promote absorption of exudates within the eye-ball. Medicinal measures.** He believes that this is a branch of ophthalmology which has been neglected, and that in the eagerness to use the knife and the needle, therapeutic measures are forgotten. Rest, hygienic surroundings and the prevention of all excitement should not be neglected. The iodides are the most reliable of the so-called alteratives. Iodide of sodium is to be preferred to iodide of potassium because it is better tolerated by the stomach. The iodides are frequently given in two small doses, and in conjunction with hot baths much larger doses can be tolerated. Although mercury and the iodides form the sheet-anchor in the removal of exudates caused by syphilis, profuse diaphoresis can be advantageously produced by pilocarpine. Salicylate of sodium has marked value in the absorption of exudates especially in rheumatic subjects or those that have a uric-acid diathesis. Hydrotherapy is a valuable adjunct to the internal remedies. He questions whether the benefit sometimes derived by the administration of mineral waters depends upon any mineral properties they may contain, or whether it is rather the great quantity of water taken into the system which naturally stimulates the elimination. [M. R. D.]

Quinquaud's Treatment in Syphilis of Children.—Gillet (*Journ. d. pratic.*, 1900) has treated children for sometime exclusively by this method, which consists in the application of calomel plaster prepared according to the formula of Quinquaud. The plaster consists of a mixture of emplastr. diachyl, calomel, and castor oil. Each square decimeter of the plaster should contain about 1.2 gr. of the calomel. Of this plaster a piece 10 to 15 cm. long and 15 to 30 cm. wide is placed upon the cleansed skin; the plaster is allowed to remain for eight days and then renewed in another portion of the body; this is continued until the manifestations have disappeared. When the plaster is removed there is a slight maceration of the epiderm but no inflammation. The author has obtained very satisfactory results from this treatment. [M. R. D.]

Phenol as a Remedy in Acute Articular Rheumatism.—Balduzzi (*Gazetta degli Osped*, April 21, 1901) has treated several cases of this disease with injections of 1 c.c. of a 3% solution of phenol into the painful and swollen joints. The results were satisfactory and lead the author to confirm the assumption of the etiologic relation between erysipelas and rheumatism from the similar therapeutic result obtained with subcutaneous injections of phenol. [T. L. C.]

Ether Compresses in the Treatment of Incarcerated Hernia.—Burzagli (*Gazetta degli Osped*, April 21, 1901) recommends compresses of ether in cases of incarcerated hernia. In a case reported, first seen 14 hours after the first symptoms had appeared the ether compresses brought about spontaneous reduction within half an hour. [T.L.C.]

Results of 950 Bacteriologic Examinations During a Diphtheria Epidemic.—Louis Cobbett (*Journal of Hygiene*, April, 1901) gives the result of 950 bacteriological examinations for diphtheria bacilli during an outbreak of diphtheria at Cambridge and Chesterton, England. The number of persons examined was 692, and it was found necessary to make several cultures in some of the cases. This brought the total up to 950 examinations. His conclusions based upon careful work and logical deductions will be found of great interest, and we append them in full: (1) Experience of the outbreak in Cambridge gave no reason for thinking that the pseudo-diphtheria bacillus is other than perfectly innocuous to man. (2) The relationship between the pseudo-diphtheria bacillus and the diphtheria bacillus remains undecided. Even though it should be definitely established that by laboratory procedures the former can be converted into the latter, it must yet be shown that the change occurs under natural conditions. (3) The frequent presence of the pseudo-diphtheria bacillus should not be allowed to weaken our efforts to detect and isolate those who harbor the virulent bacillus. (4) The principal means of combating diphtheria are, after the isolation of persons actually sick; the detection of those who go about apparently in good health carrying with them the diphtheria bacillus, and the isolation of such persons, and of convalescents from the disease until diphtheria bacilli can no longer be cultivated from them. No doubt the satisfactory isolation of healthy persons who carry about the bacillus will often prove impracticable. In such cases the infectious persons should be warned that they are a danger to others, and instructed to take certain precautions, which need not be detailed here. In the case of children isolation will usually be practical, and experience among the poorer classes in Cambridge has shown that parents can usually be brought to consent to the removal of their children to an isolation home. (5) With increasing confidence in the bacteriological test on the part of the medical profession and of the general public, such measures will be much facilitated. But this confidence will not be forthcoming until bacteriological examination distinguishes clearly between the diphtheria and the pseudo-diphtheria bacillus. (6) The prophylactic use of antitoxin during the outbreak of diphtheria at Cambridge proves its great value. It ought always to be accompanied by bacteriological examination lest by suppression of symptoms of disease it be the means of preventing the isolation of those who have fallen ill, and of allowing them to go free and distributing infection. The need of this precaution is strengthened by the fact that the few persons who continue to harbor the diphtheria bacilli for a long time were among those who in consequence of a timely dose of antitoxin, or because they were naturally insusceptible, were little or not at all affected. It seems probable that an active inflammatory reaction is instrumental in expelling the bacilli, which are consequently more apt to persist if this is prevented. [T. L. C.]

Blindness Caused by a Tapeworm Remedy.—C. H. Kohler (in the *Northwestern Lancet* of April 1, 1901, quoted in

Medicine, June, 1901) decribes the case of a girl, 17 years old, strong and well, who procured two bottles of "Dr. Pusheck's Tapeworm Remedy." The first bottle was taken in three doses, six hours apart. One-third of the second bottle was taken later—in all, one and one-third in twenty-four hours. Soon after taking the last dose there was severe pain in the bowels. The day following there was a slight headache which increased in intensity, and toward evening she became unconscious. The coma lasted nearly four days. At the end of that period she gradually regained consciousness and apparently suffered no ill effects from the action of the remedy, with the exception of total blindness. The pupils were widely dilated, the ophthalmoscope showing white nerve heads, all blood-vessels in the disks being obliterated. The intra-ocular tension was increased. Treatment was of no avail.

The writer speaks of the possible composition of the mixture. He excludes pomegranate because of the latter's known tendency to congest the retina, the opposite of the condition found in this case. The symptoms agree fairly well with a mixture of santonin and male-fern, the former producing the general toxic effects and the latter the ocular symptoms. [T. L. C.]

The Value of Massage in Gangrene.—Douglas Graham (*International Clinics*, Vol. IV, Series 10, quoted in *Medicine*, June, 1901) describes the remarkable results achieved in a diabetic who had had gangrene in one leg which necessitated amputation. The other leg became involved, there having been a succession of scabs formed on the foot so that the symptoms somewhat resembled Raymond's disease. At the time he was seen no pulse could be felt in the dorsal artery of the foot or in the posterior tibial. After a half-hour's massage, the whole foot and leg were warmer, the tissues softer, and the tension less, and the dorsal artery could be felt so that the pulse could be counted. The method of work was principally by deep manipulation in a downward direction to aid the arterial current, followed by upward friction or effleurage to aid the venous and lymphatic flow.

Early in his practice the writer had a case of Raynaud's disease in which the typical vasomotor spasm was present, which rapidly improved under massage. As a result of his work in these cases he comes to the conclusion that where massage is effective in Raynaud's disease, it shows its results very quickly by the improved circulation and greater comfort. The vitality of the tissues can be maintained and improved by massage, but even where the integrity of the tissues is seriously impaired recovery may take place. The beneficial effects of massage in these cases are of a permanent character. [T. L. C.]

Note on the Treatment of Otorrhea.—Aiken (*The Lancet*, April 20, 1901) uses a probe at the end of which are two spiral teeth, which, while they hold the wadding firmly, permit of its easy removal by rotating the stem clock-wise. He first pours the lotion to be used into the ear; then taking as large a plug of wadding as is thought sufficient when screwed upon the probe to easily fit the meatus. The idea is to make the probe and the ear canal a suction syringe. If the wadding is too small or too large, it can readily be changed, and when fitted properly will force some of the solution before it. By this method the fluid will reach both the attic and the mastoid recesses. Although it is quite effectual upon acute otorrhea, its benefits are greatest in old standing cases where the mastoid has become infected. The author recommends either chinosol, iodoform or amyloform in alcohol, and gives the following advantages: (1) It acts promptly upon the polypoid growths; (2) It is a most satisfactory antiseptic; (3) As it evaporates, it leaves a dry surface. [T. M. T.]

On the Uses of Diphtheria Antitoxin.—Broadway (*The Lancet*, May 4, 1901) considers the gluteal or interscapular region the best for injection in the very young; in older children, he injects into the loose tissue of the breast. If the child shows fear he injects into the gluteal region. He also advises free and early use of the serum, and in doubtful cases not to wait until the bacteriological examination is made before giving the injection. [T. M. T.]

Whooping Cough Cured by Irrigation of the Nares.—Payne (*The British Med. Jour.*, May 4, 1901) reports the case of a boy who was suffering from a very severe attack of the above disease. The author used 10 to 20 ounces of carbolic solution (1 in 40), injecting it by a syringe through the nostrils, allowing it to go up one and down the other. This was done three times a day. At first the irrigation caused a good deal of sneezing and coughing and a considerable amount of gelatinous mucus was discharged. After a few times the operation caused no discomfort and was looked forward to because of the relief which followed. The attack seemed to be cured in a week, but the irrigation was kept up for a few days longer. Insufflation and sprays have not met with much success, and the author ascribes this to their inability to reach all parts of the nares which can be done with the above irrigation. [T. M. T.]

Erysipelas Treated with Antipneumococcus Serum.—Gill (*The British Med. Jour.*, May 4, 1901) recommends the serum treatment in the above condition. He advises 10 c.cm. of the serum injected under the skin of the abdomen once daily. With each injection there was a noticeable reduction in the temperature, and after eight doses were given there was slow but complete recovery. [T. M. T.]

The Open-Air Treatment of Phthisis at Home.—Bartlett (*The Lancet*, April 20, 1901) reports a case of a patient who remained in a covered enclosure opening toward the south, with protections against stormy weather, during the entire day only going into the house to meals and to sleep at night. During the day she sat or reclined upon a couch and was encouraged to take short walks. As the season was winter (February) a small stove was used for comfort. While in the house, especially at night, all the windows of the room were kept open, the bed being protected by a screen. The patient did not complain of feeling cold, even in the severest weather. After a couple of weeks her cough began to improve, the amount of expectoration diminished, the evening temperature fell below 100° and she commenced to gain weight. In April she had a slight relapse with higher temperature, prostration, laryngeal hoarseness and cough. At that time she was kept in bed in the house, but as soon as this disappeared, resumed her out-of-door life with continued improvement. The medicinal treatment was one drop of creasote three times a day; inhalation of terebene several times daily, and an anodyne cough medicine when needed. [T. M. T.]

On the Causation and Treatment of Profuse Epistaxis in People Beyond Middle Age.—Coates (*The Lancet*, April 20, 1901) in his treatment states that his first object is to try to relax the arteries and strengthen the heart so as to get the veins emptied naturally. Nitroglycerin was given with good results in the reported cases, and as soon as the smaller arteries were sufficiently dilated the bleeding ceased. The author keeps his patients slightly under the influence of nitroglycerin for sometime, adding tincture of strophanthus as well. Some of the causes which lead up to the above condition are: (1) Long-continued high arterial pressure; (2) Some sudden cardiac failure; (3) Overfilling of the whole venous system, the weakened heart not being able sufficiently to empty the engorged veins against the high pressure in the arterial system due to contracted arteries; (4) Leakage from overfilled veins. [T. M. T.]

DISEASES OF WOMEN.

Paraffin Injections for Urinary Incontinence.—R. Gersuny reports a case in the *Centrbl. f.Gynoek.*, December, 1900, quoted in *Glasgow Med. Jour.*, May, 1901. The patient had suffered from a vaginal urinary fistula; operation for its relief resulted in sloughing of a considerable part of the urethra with consequent dribbling of urine. Attempts to cure this by torsion of the urethra failed. The patient had a certain amount of control of the passage in the recumbent posture, but none while standing, or walking, or even in sitting. The bladder was never completely emptied, as some folds of the vesical mucosa occluded the opening, and this condition also aided the patient in retaining her urine voluntarily. Gersuny accordingly treated the condition by injections of paraffin (*ungt. paraffini:* a mixture of hard and soft paraffins, with a melting point of 104° F.). This paraffin was injected first into the folds of the vesical mucosa which were visible, then into the tissues all round the opening at various points, till about 3½ c.cm. in all had been injected; a small injection of cocain was used locally for anesthetic. The

emphasized. But from the first indication of endocarditis we must enforce the same directions for the sake of the future of the heart itself. We expect some deformity of valve or orifice to remain in most cases. Fortunately, the vital resources of this organ are sufficient to compensate the damage very well. Our treatment here, as always, should be to aid nature in her efforts to bring about compensation through a proper degree of cardiac hypertrophy. It stands to reason that the important indication is for rest—rest in the recumbent posture, mental rest, and the avoidance of any strain upon the heart. Absolute rest, but for how long? Here careful attention is required in order to reach the best results. We will all agree that rest should continue beyond the acute stage until the heart has fully regained its ability to do its work while the body is at rest, but this degree of compensation will not be sufficient for the upright posture and active exercise. We must, therefore, so graduate the return to activity that the compensatory process will keep pace with the demands upon the heart up to the full requirement.

Must dilatation be absolutely avoided? Let us see. Undoubtedly an increase of tension in the ventricular wall, caused by overfilling the cavity, furnishes the stimulus to hypertrophy. If so, dilatation to a slight degree is a necessary condition in order to compensation. Recognizing this, we may greatly aid in the recovery of our cases by furnishing just this stimulus through inducing or permitting the slight amount of dilatation that is requisite. We may, therefore, soon after compensation for the recumbent posture is secured, begin a series of exercises that will by very slight degrees increase the work of the heart, and through the increase of ventricular tension, furnish the stimulus to a progressive hypertrophy. These exercises should be first passive, i. e., movements of the extremities, friction of the surface and like means, by an attendant, without any effort whatever on the part of the patient; later, active movements by the patient in moderation are permitted, and later still, resistive exercises, the patient resisting by muscular effort the movements of his limbs by the attendant.

All this may be done before the patient is allowed to get out of bed. It is necessary during this course of treatment to watch the pulse rate carefully. Any considerable increase in rapidity would probably indicate a dilatation beyond the salutary degree and must be avoided. In our typical case, the pulse rate should not vary much, from the beginning of the compensatory process with the patient in bed until the process is fully completed and the patient up and about, unless the nutrition of the heart or its innervation are abnormal. As a matter of course, any general condition such as anemia should be met by appropriate remedies and careful and constant attention given to elimination by bowels, by kidneys, and by the skin. Frequent sponge baths are an important aid.

In these cases the influence of the state of the arterioles depends very largely upon the age of the patient. In young persons, without any arterial changes, their influence, as a rule, need not be seriously considered, but with persons beyond middle age, particularly with indications of arterial sclerosis, their influence becomes very decided, and it will be essential to promote a better capillary circulation by keeping them as constantly as possible in a state of dilatation. The value of capillary exercise in order to maintain good reactive power and dilatability of the arterioles, cannot be over-estimated. To this end, daily cold bathing, frictions, gymnastics, after the stage of recumbency has passed, will be decidedly conservative of the integrity of the peripheral circulation. The use of nitrites to maintain a freely patulous condition of the arterioles, may be required. Much of our success in the management of these cases will likewise depend upon the age of the patient. Naturally, the young person will have a heart possessing greater capability of compensation, while a person in advanced years will earlier suffer from diseases of nutrition of the heart structure.

What about the use of cardiac stimulants? It will be advisable, as a rule, to maintain a proper nervous tone of the whole circulatory apparatus, which may be accomplished by the use of strychnin without stimulating the heart muscle itself to any great degree, but when it comes to positive cardiac stimulants, such as digitalis, it becomes a question whether they are often indicated.

Following our line of argument, and the indications based thereon in reference to rest and graduated exercises, we would naturally conclude that in most cases nature will be abundantly able to accomplish the highest degree of cure without the aid of stimulation. The drug digitalis has doubtless been used too indiscriminately upon the first appearance of a cardiac murmur. But the clear indications for the use of this drug are to raise arterial tension by its power to stimulate the heart to more forcible contraction, and by its contraction of the arterioles. The best view to take of the use of digitalis, in my opinion, is to regard it as a whip to the heart to tide over some emergency. If, indeed, the emergency of an excessive dilatation or of general circulatory failure occur, digitalis is indicated. And, again, if our patient is beyond middle life, and the compensatory process is slow or deficient, then it may be necessary by the use of this drug to raise arterial pressure and thereby contribute to a better nutrition of the heart muscle. But in a young patient with valvular disease, digitalis, as a rule, would not be indicated except in cases of so great disability as to threaten general circulatory failure. In other words, digitalis would be indicated as an emergency drug whenever the heart seems to be losing ground, its use to be continued only until the balance returns in the heart's favor. When compensation is fully established, and the cure, as far as possible, attained, digitalis is very seldom indicated and may do harm.

Having aided our case up to the point of functional cure, i. e., perfect compensation, we dismiss it with precise directions as to future occupation, habits of life and proper hygiene; but it is difficult to dispel from our mind the feeling that the individual is constantly treading upon treacherous ground, —at least, we feel a wholesome anxiety for his future. Why? Because we know that his heart can be more easily damaged by over-exertion than before, and its nutrition more readily interfered with

with corn smut. For the chemical experiments a large number of different specimens of smut were obtained from different parts of the country. Extracts were prepared with naphtha, ether, alcohol and water, and each extract separated into two parts by precipitation with lead acetate. The lead was removed from each part by hydrogen sulphide and the products were again extracted with each of the above solvents. The residues obtained by evaporation of the solvents from the various solutions were tested in frogs by injections of large doses in the abdominal cavity, but in no case was the substance found to be active. In this article the author furnishes an exhaustive account of the many experiments performed negatively in the effort to obtain any pharmacological action with the drug. He concludes that corn smut is inert and cannot be used to replace the ergot of rye in medicine. Balch found that the different specimens of corn smut varied considerably in composition, the extracts of some containing a large amount of resinous material, while in others the amount is very small. From one specimen a crystalline substance, apparently a sugar, was obtained, but it was present in none of the others. [T. L. C.]

The Effect of Chloroform Anesthesia upon Renal Permeability.—Benassi (*Gazz. Osp.*, March 3, 1901) states that renal permeability is diminished from the effects of chloroform narcosis. No constant rule can be given, for much depends upon the length of the narcosis and the quantity of the chloroform used. Each individual has a special coefficinent for the passage of substances through the kidneys. The length of elimination of chromogen is generally modified after chloroform anesthesia. The quantity of urine containing the eliminated material is less after narcosis. The author states that it is easy following the method of Lépine to appreciate quantitatively the diminution of the permeability after narcosis. [T. L. C.]

The Treatment of Chronic Suppurative Otitis Media.—Dr. Gautier, of Lille (*Echo med. du Nord*, March 17, 1901) discusses otitis media from the point of view of treatment. It is necessary to distinguish two points in the diagnosis and prognosis of chronic suppurative otitis media: (1) The seat of the anatomic lesion and the aural discharge. (2) The defects of hearing present. The otorrhea may affect the canal only, or the canal and the attic, or it may affect the canal, the attic and the antrum. According to Gautier each of these categories corresponds to different clinical types. In the first, the pus is not fetid, but is abundant and of varying color. In the second if fungosities exist the pus is not abundant, but is often fetid. Finally, the third class is always characterized by the presence of choleastomatous masses, and the patient suffers from mastoid pain which is relieved when the discharge ceases or diminishes. It is always present, however, when pressure is exerted over the mastoid. Treatment varies with the nature of the affection. Medically it should include thorough cleansing of the ear, and the instillation of dry boric acid. When polyps are present they should be removed and the auditory canal curetted at the time of operation. Inflammation of the attic may call for Stacke's operation, and inflammation of the antrum may necessitate an opening of all the cavities of the middle ear. It is useless, and at the same time dangerous, to employ douches of air or catheterization in the course of treatment in the effort to aid the defective hearing. It is established that all suppurative conditions may be made to disappear by the employment of the proper treatment, local, as well as general and hygienic.

[T. L. C.]

ORGANOTHERAPY.

The Treatment of Rachitis with Suprarenal Extract.—Stöltzner (*Jahrbh f. Kinderhke.*, LI. 1.2 p.73. 1900) reports satisfactory results obtained in 71 rachitic children who were treated with suprarenal extract three times daily, with quantities proportionate to their weights The general condition of the children was influenced beneficially. The sweating, the craniotabes, vasomotor disturbances of the skin, and the other symptoms were especially benefited. The peculiar odor of the urine observed in these conditions either disappeared or markedly diminished under this treatment. The influence of the treatment upon the fontanelles and upon the rachitic rosaries was less marked. Spasm of the glottis and other symptoms indicative of tetany were not influenced at all. Improvement was observed during the first weeks of the treatment. Interruption of the treatment caused a cessation of the improvement, and an increase in the rachitic phenomena.

[M. R. D.]

Suprarenal Extract as an Ecbolic and Cardiac Stimulant.—*The Medical Press* (May 8, 1901) mentions the outcome of some researches carried on at Edinburgh into the physiological action of the suprarenal gland, which shows that it excites uterine contraction in a very marked degree whether the uterus be gravid or not, its action being much more powerful than the agents generally employed with that object in view. As the active principle of the gland is not decomposed by the gastric juice it can be administered by the mouth, nevertheless, when resorted to for the purpose of checking post-partum hemorrhage, it is recommended to inject it directly into the uterine cavity, so that it may exert its constricting effect on the uterine arterioles in addition to setting up muscular contraction. For this purpose an ounce of dried gland substance is infused in a pint of water, and to this liquid, after boiling, are added two ounces of chloride of calcium. This is injected as hot as can be borne. The gland exerts a remarkable tonic action on the heart. The intravenous injection of one-sixtieth or one-seventieth grain of the gland is said to avert impending cardiac failure. When dried and put up in hermetically sealed glass capsuits the gland substance preserves its properties indefinitely, and it is evident that we have in this gland an addition to the therapeutical armamentarium of considerable value. [T. L. C.]

The Untoward Action of Aceton-Chloroform (Aneson, Chloretone).—The *American Journal of Insanity* (April,1901) states that while so much is being written concerning the value of aceton chloroform as a hypnotic by those who have observed its use clinically, it seems that attention should be called to the experience which has been had with it in many physiological laboratories. It was introduced in America by Prof. John J. Abel, of the Johns Hopkins Medical School several years ago for physiological purposes and was found to serve admirably in keeping animals quiet for a sufficient time to allow operative wounds to heal without interference on the part of the animal, but when so used but a single dose was usually given and the animal was not kept under its influence continuously by a series of doses. Recently Dr. E. Impens has been experimenting with aceton chloroform and the conclusions from his article (in the *Archives Internationales de Pharmacodynamie et de Therapie*) are as follows: (1) The quotient of toxicity is, in warm-blooded animals, from 1/1.76 to 1/1.68, while of the drug is, in warm-blooded animals, from 1/1.76 to 1/1.68, while for hydrate of chloral the same quotient is not more than 1/4.32. It is then 2½ times as toxic as hydrate of chloral. (2) With a very small dose at the beginning of its action, aceton chloroform is without influence on the frequency of respiration, but it diminishes the amplitude of the inspirations. With a medium dose it is capable of producing a deep narcosis, reduces the total volume of air inspired per minute 70%, the volume of individual inspirations 60%, the frequency 40%. It diminishes, therefore, considerably the pulmonary aeration. (3) Aceton chloroform paralyzes vasomotor centers and leads to a marked dilatation of the blood vessels; this is followed by a notable fall in the blood pressure, a fall of about 43% with a barely efficacious dose. (4) The vasodilatation is not the only cause of this lowering of the arterial pressure. The drug has an equally paralyzing effect on the heart. In small doses this cardiac action is slightly less marked than with chloral hydrate, but with a sufficient dose to produce any pronounced hypnotic effects it is quite as well marked. (5) Aceton chloroform narcosis is accompanied by lowering of the temperature to below 34.5 C (94.1 F.) in the rabbit, in the smallest effectual dose. This fall in temperature is due not alone to the increased caloric radiation, but also to a direct paralyzing action on the cellular protoplasm. (6) This influence on the protoplasm is again clearly shown by the marasmic condition in which the animals remain even for a considerable time after waking. Finally, experience undoubtedly shows that aceton chloroform restricts the combustion of oxygen more than 50 per cent. It is therefore clearly evident that the respiratory function of the protoplasm is interfered with.

(7) In one respect, however, aceton chloroform is superior to chloral hydrate. It is less irritating and has some slight anesthetic properties. Nevertheless this fact should not enter into consideration in view of the high degree of toxicity of the drug and of its injurious effects not only on the cardinal functions of the organism, but also on the protoplasm itself.

The writer is justified in stating then, that aceton chloroform is a dangerous narcotic, much more dangerous than chloral hydrate. The well-known effects of the chlorine compounds in causing fatty degeneration should also be borne in mind. Recently also several articles condemning its use as a hypnotic have appeared in the *Ungarisches Archiv fuer Innere Medizin*. In view of the efforts which are being made to bring this drug into general use as a hypnotic in institutions for the insane he would call attention to the above results, and would urge the greatest caution in its employment. Several instances of its untoward effects have already occurred. [T. L. C.]

DERMATOLOGY.

The Treatment of Initial Syphiloma.—Leone Levi (*La Riforma Medica*, July 19, 1901, quoted in *Jour. of Surgical Tech.*) claims that his method is new, the means used for its application not being new, however. He cauterizes the syphiloma, preferably by means of the galvano-cautery. Certain practitioners in the past cauterized a syphiloma perhaps once; the author does it, if necessary, a thousand times, until the treatment determines an intense local inflammation of the tissues. This makes the syphilide a mere local infection, preventing constitutional infection with all its consequences. He describes his method in detail, and claims absolutely successful results in 32 cases.

[T. L. C.]

Is the Internal Administration of Sulphur in Acne Vulgaris and Acne Rosacea a Rational Procedure, and How are the Eventful Results to be Explained?—Behrmann (*Dermatol. Centralblatt*, 1900, No. 9), under this title discusses the administration of sulphur and its results in chlorosis. As acne frequently accompanies or follows chlorosis, the author believes that at the time of puberty, especially in females, there develop toxins in the intestines, which are taken up by the blood, injure the red blood cells and cause an intoxication of the heart-muscle. Furthermore, the chlorosis and the accompanying acne vulgaris and rosacea result from the toxins in the intestine. Chlorosis is beneficially influenced by the administration of sulphur, probably because the sulphur gives up oxygen to the red blood cells. The sulphur is also eliminated by the skin, and thus influences the sebaceous glands. The author recommends in persistent constipation a half to one teaspoonful of sulphur with an equal quantity of sugar of milk every morning from three to four weeks, and after that continuing the treatment for two months three or four times daily in minute doses. In addition sulphur also can advantageously be applied externally. [M. R. D.]

The Treatment of Senile Pruritus.—Jaenicke (*Centralbl. f. inn. Med.*, 1900. No. 48) recommends as temporary alleviation of the itching, systematic brushing of the skin with subsequent alcohol applications. By brushing the skin with a soft brush, the dead and macerated epiderm is removed. The brushings of the skin should at first be performed three times daily from ten to twenty minutes at a time and then decreased in frequency. Afterward pure lard or lanolin should be rubbed into the skin. The author considers vaseline as less efficacious. He has employed this manner of treatment for twelve years with satisfactory results.

[M. R. D.]

The Effect of the Inhalation of Ethylene.—J. L. Smith and A. P. Hoskins (*Journal of Hygiene*, Vol. 1, No. 1) have recently conducted experiments which disprove the statement that ethylene is toxic. They have found that its effects are very slight even when 72% of the gas is present. Ordinary coal-gas does not contain more than ¾% of ethylene, and in air which has been rendered just poisonous by the addition of coal-gas, only about 0.2% of ethylene would be present, so that it is impossible to attribute to ethylene any part of the poisonous action of goal-gas.

[T. L. C.]

THE NEWER MATERIA MEDICA.

Organic Halogen Compounds.—The combination of the halogen group, says Walker Hall (in *Medical Chronical*, April, 1901), with organic substances was devised to obviate the occurrence of bromism and iodism, and to obtain more effective results than the ordinary preparations produced. As yet, however, these conditions are not entirely fulfilled. Blomquist (*Hygeia*, 1900, p. 643) describes **iodalbacid** as a compound of iodine with egg albumin. It is of acid character and contains 10 per cent. of iodine. The daily dose is 45 to 60 grains and is best administered in capsules. **Iodipin** is a combination of iodine, triglycerides and fatty acids (sesame oil). In 10 per cent. solution it is an oily liquid, Sp. Gr. 1.025, insoluble in water and alcohol, but soluble in chloroform, ether, and benzol, ℥ 3 of this 10 per cent. solution contains six grains of iodine, corresponding to eight grains of potassium iodide The daily dose is ℥ i to vi 3. It may be used with benefit in asthma, bronchitis, emphysema, pleurisy, glandular inflammations, and tertiary syphilis. In 25 per cent. solution it is a red violet oil, of honey-like consistence in cold weather, and chiefly employed in subcutaneous injections. The lumbar and gluteal regions are usually selected. According to Klingmüller (*Berliner Klin. Wochenschr.*, 1899, No. 25) and Sessions (*Inaug. Diss. Darmstadt*, 1900) it is well absorbed, slowly eliminated, does not produce iodism and rapidly affects the tissues. Winternitz (*Zeitschr. fuer physiol. Chemie*, 1898. vol. xxiv. p. 425) states that it is stored as iodized fat in the omentum, subcutaneous tissue, liver, muscles and bone marrow. When this fat is metabolized the iodine is set free to combine with the alkalies of the blood. Zirkelbach found iodine in the urine 20 minutes after indigestion *per os*, but when given subcutaneously Blomquist did not obtain any reaction until after 52 hours. Elimination continues for 8 to 29 days after the last dose, whereas with potassium iodide the urine is free from iodine in four days. For the detection of traces sulphate paper, the following method is useful. To 25 cc. of iodine which will not react with starch-ammonium-per- of urine, a few drops of NaOH, and 30 grains of Na^2CO^3 are added, the whole evaporated to dryness, and dissolved in 5 cc. of water. After filtering and acidifying with HCl, the filtrate is heated to expel CO^2 and any cyanides which may have formed, when on the addition of a few drops of nitrous acid or sodium nitrate, the iodine is liberated, and its presence shown by starch solution. The color reaction is intensified if the starch solution is added before the nitrate. Möller (*Svenska Lakare-sallskapet Forhandlingar*, 1900) finds that iodalbacid causes iodism, and is only advantageous in potassium iodide idiosyncrasy. Iodipin is effective, but the injections of large doses are somewhat painful. **Bromipin** is a compound of bromine with fatty acids (sesame oil. ℥ 3 of the 10 per cent. solution contains six grains of bromine, corresponding to eight grains of potassium bromide. In doses of ii to iv 3 it has been found useful in epilepsy and neurasthenia. Wulff (*Aerztl. Monatsschrift*, 1899, No. 11) recommends it in ℥ i to iii 3 doses for sea-sickness, and Laudenheimer employs it for nutritional purposes, giving half to one ounce per day. If objection is taken to its oily flavor, Kother advises a daily enema of ½ to ℥ i 3 at bedtime. **Iodopyrin** has been used by Frieser (*Wiener Klin. Rundschau*, November 25, 1900) for months without any formation of habit or untoward result. It has decided antirheumatic, antineuralgic, and antifebrile properties. The dose is up to 60 grs. daily. The administration of **thyroiodine** appears to confirm Drechsel's opinion that there are several active principles contained in thyroid extracts, for yet another addition to the long list of *accidents* is made by Coppez (*Journ. de Med. Brux.*, 1900). During its use in five cases of obesity, retro-bulbar optic neuritis with central scotoma occurred somewhat suddenly, and recovery was tardy. Venneman (*La Semaine Medicale*, 1901) met with two cases of accommodative asthenopia during 'thyroiodine" treatment, which disappeared when the medicament was withdrawn. Tronchet (*Bull. Soc. Med Rochelle*, 1900) reports a case of fracture, in which the fragments were mobile 31 days after reduction. When thyroiodine was given, the pseudarthrosis disappeared and union was completed in 14 days. Rivière (*La Med. Mod.*, 1901, p. 29) observes that certain pathological conditions may produce "perturbation" of thyroid functions and cause severe symptoms. As one of the sequelæ of influenza, there appeared in a patient aged 24 years, an acute inflammatory

swelling of the thyroid accompanied by dysphagia, dyspnea, and rapid pulse. A purgative was given, and thyroiodine prescribed. On the fourth day the symptoms had entirely disappeared. A case of acute inflammation supervening upon carcinoma of the thyroid gland, and an outbreak of tachycardia, extreme feebleness, and profuse sweatings in a goiter patient yielded equally to thyroidine. [T. L. C.]

Anticeltina (*Rass. Intern. della Medicina*) is a chemical formed by combining urea and quicksilver in the proportions of 43 per cent. to 4 per cent. It is prepared and recommended by Professor Andreocci, and its therapeutic properties are the subject of a long article by Drs. Francaviglia and Capparelli, who used the drug by subconjunctival injection in infective keratitis and iritis. They look upon it as quite equal to corrosive sublimate in its therapeutic properties in such cases and much better borne by the patient. In solution of one part to two thousand parts of water they find that it causes no pain, and they conclude that its beneficent action is due to a quickening of the lymphatic circulation and an elimination of the diseased products. [T. L. C.]

TOXICOLOGY.

Mushroom Poisoning.—Barabo (*Soc. de Nurembery in Muench. med. Woch.*, February 5, 1901) reports poisoning in 6 persons in a family who had partaken of soup made with different kinds of mushrooms. The symptoms appeared in the parents, in a young girl of 14 years, a boy of nine, a domestic of 19 and a young lad of 16 years. In about 12 hours there occurred violent diarrhea and vomiting, colic, tenesmus, thirst, headache, vertigo and palpitation. The child of nine years died of cardiac failure after having partaken of some of the raw mushrooms. The boy of 16 had violent diarrhea for 3 days, but recovered completely, as did the others. The author believes that the poisoning in these cases arose from the fact that the mushrooms were not properly peeled. [T. L. C.]

Intoxication by Bismuth.—Dreesman (*Soc. de Cologne in Muench. med. Woch.*, February 5, 1901). Kocher has published a case of intoxication by bismuth, and others have been observed by Petersen, Dalché, Gaucher, Cohn, Dubreuilh. Experimentally the question has been considered by Langhans and Steinfeld, Meyer, Dalché and Villejean and Haegler. The salicylate has produced intoxication, as has the subnitrate and the preparations "dermatol" and "airol." The author's patient was a young man of 30 years who had an extensive burn, which had been anointed with a pomade containing 10% of the subnitrate of bismuth. Three weeks later a black sediment was found in the urine. Three weeks following this there appeared a severe stomatitis with considerable pain and dysphagia. There was a greenish deposit at the gingival and alveolar borders. The same coloration affected the tongue and the soft palate. These phenomena disappeared very slowly after the withdrawal of the ointment, but traces of pigmentation were present after six months. These intoxications are extremely rare. but very easy of recognition, and they do not at all contraindicate the employment of bismuth. [T. L. C.]

Poisoning by Turpentine.—Grapel (*British Medical Journal*, February 9, 1901) reports the case of an infant of 5 years, who had swallowed turpentine by mistake. There followed difficulty of micturition and the urine became bloody. These phenomena increased as the general state became more depressed. Delirium followed. Diuretics and hyoscyamus were prescribed. The recovery was very slow. Twenty-four days after the absorption of the drug the urine still presented the characteristic odor of violets. [T. L. C.]

On Some Lesions Produced in Experimental Intoxication by Calomel.—Jousset and Lefas (*Arch. g. de Med.*, February, 1901), investigating this subject, report that lesions of the liver are common and consist of inflammation of the bile duct and in granular atrophy of the liver cells with phenomena of nuclear chromatolysis. The lesions are very similar to those which are common in the course of a great number of infectious diseases, and seem to mark the beginning of a biliary cirrhosis. In the kidney the changes consist at first in simple congestion with granular degeneration of the cells lining the tubules; later they become filled with blood and hemorrhages appear. The cells show the grave lesions of granulo-vacuolar degeneration with formation of cylinders. Alterations in the glomeruli are found concurrently. These lesions are evidently those of a glomerulo-nephritis, similar to those forms caused by the subacute intoxication by cantharides, and also resemble the lesions found after the ingestion of ricine. [T. L. C.]

Intoxication by Caoutchouc in Workers in this Material.—Dorendorf (*Soc. de la Charite de Berlin in Muenchen. Med. Woch.*, February 5, 1901). The author has observed in these cases pains in the extremities, extreme sensibility of the muscles to pressure, weakness of the extremities occurring first in the right hand, lowering of the temperature on the affected parts, an exaggeration of the mechanical excitability of the skin, and an exaggeration of the tendon reflexes. At the same time there appeared in the blood yellow granulations in small number. The author has experimented with the solution employed in the manufacture of caoutchouc upon guinea pigs. The animals died after inhalation with contractures and their blood contained cellular degenerative forms of cells and granulations. The bone marrow also showed lesions. The cause of this intoxication is ascribed to the benzine which is found in these solutions. [T. L. C.]

Poisoning by Arsenetted Hydrogen.—J. S. Clayton (*British Med. Jour.*, February 16, 1901)reports ten cases of poisoning by this drug in men who were engaged in manufacturing zinc chloride from crude zinc oxide and hydrochloric acid. Both of these materials were known to contain arsenic, but the exact percentage was not determined. The symptoms were nausea, hot burning pains in the throat and stomach, intense thirst, violent vomiting, hemoglobinuria, jaundice of an intense coppery hue, prostration, cyanosis and thready pulse. These symptoms gradually diminished after several days, but the feeling of depression, the anemia and pale green color of the skin lasted for several weeks longer. One case in an alcoholic terminated fatally on the seventh day. The workman who was most effected and who recovered was unable to go to work for five weeks. [T. L. C.]

Hematoporphyrinuria Following Chloroform Inhalation.—Nicolaysen (*Norsk Mag. f. Laegevin densk.*, Vol. 62, p. 24. January, 1901) reports a case in which a patient of 49 years, who was operated upon for appendicitis inhaled 40 grams of chloroform. After the operation there was found an abundant hematoporphyrinuria. The urine had been normal before the operation. Cylinders were also present, but neither albumin nor sugar. This condition continued for about one week. The urine then returned to normal with the exception that urobilinuria appeared, which lasted for three months. The author explains this condition by the great number of red cells destroyed in the liver. By analogy he believes that the increased destruction of hemoglobin associated with diminution of action of the heart can produce disturbed oxygenation and lead to hematoporphyrinuria. (T. L. C.)

Acute Nephritis and Uremia due to Cantharadin.—Murraturi (*Gaz. Osped.*, February 10, 1901) reports the case of a young woman of 18 who suffered from a severe sciatica. A large blister was placed over the course of the right sciatic nerve and permitted to remain for 16 hours. There followed a marked diminution of the urine, which became very dark colored. The third day the face became edematous, convulsions appeared, and an intense dyspnea, amaurosis became complete. There was anuria for the next 48 hours. Scant urine was then excreted which was bloody and very albuminous. The alarming state continued for several days, but recovery followed. [T. L. C.]

A Case of Poisoning by Formalin.—Dr. L. Zorn (*Hospitalstidende*, quoted in *The Therapist*, May 15, 1901) observed a man of forty-four years who by accident drank about an ounce of a 30 to 40% solution of formalin, and noticing what he had done, at once swallowed some milk and vomited. Transferred to the hospital, his stomach was washed out. He was quite dyspneic, giddy, anxious, with a burning in his mouth and stomach, and a tendency to vomit. He was wholly conscious, but with a cool skin and cyanotic lips and extremities. For twenty-four hours he passed no urine, and his bladder was found empty. The next day,

however, he voided a little over three ounces of urine, which contained albumin, and both hyaline and granular casts and leukocytes. In the first few days following he had several loose stools. These symptoms, which at first seemed quite threatening, quickly assumed a milder aspect; the quantity of urine increased, the albumin disappeared, and no casts could be detected. Six days after admission he was discharged as cured. The treatment was limited to washing out the stomach, diet, warm baths, and a mineral water—Wildungen water. [T. L. C.]

A Case of Argyrosis.—Jaksch (*Wien. Klin. Woch.*, No. 9, 1901, quoted in *Treatment*, May, 1901), reports a case of argyrosis in a glass-bead worker. In this work the workman sucks with a mouthpiece a mixture of silver nitrate, ammonia, and potash. It is inevitable that some of this fluid gets into the mouth. At first this causes only rhagades. Silver-poisoning does not appear for five or six years. The skin is colored steel gray, and pigmentation is most marked on the face. In the case reported, the mucous membranes were also colored, but the peculiar coloring of the hair was absent. [T. L. C.]

Urticaria Caused by Formalin.—L. G. Glover (*Brit. Journ. of Dermatology*, April, 1901, quoted in *Treatment*, May, 1901) reports a case of severe urticaria in a young woman, caused by the use of formalin in a hair lotion. The eruption occurred on the day following the use of the lotion, and consisted of violent urticaria covering the whole body. The face was much swollen. The eruption proved rebellious to treatment. It is interesting to note that there was no local dermatitis of the scalp, so that the cause lay in absorption of formalin vapor. [T. L. C.]

On Certain Practical Applications of Extract of Suprarenal Medulla.—Schaefer (*The British Med. Jour.*, April 27, 1901) suggests the use of the above drug in cases in which it is desired to strengthen or to induce uterine contraction. It has been observed that it has a far greater power in causing contraction of the muscular tissue of the uterus, whether pregnant or non-pregnant, than any other drug having the same reputed action, and this whether the extract be applied directly to the muscular tissue or be introduced into the circulation. It can be given by the mouth as the gastric juice has no effect upon it. In post-partum cases it is best injected into the uterine cavity. The solution used is an infusion of dry medullary substance, thirty grains to the pint of water. It is also efficient in cases of sudden cardiac failure, whether due to shock, hemorrhage, or an overdose of anesthetics. In these cases a sterilized decoction, five grains to the fluid ounce, which must be filtered, should be injected, hypodermically, slowly into a superficial vein, or even in extreme cases into the heart itself through the thoracic wall. [T. M. T.]

The Use of Methylene-Blue Injections in Pleurisy with Effusion.—C. H. Lewis' (*Med. News*, June 1, 1901) method is to apply the aspirator (Potain) carrying the tube which withdraws the serum, to the bottom of the vessel. The short tube through which the air is exhausted remains as usual. Any aspirating syringe will serve. The serum is then drawn into the graduate by the ordinary method and readily mixes with the blue which has previously been placed therein. This is then forced back into the pleura by reversing the action of the aspirating syringe. The process can be repeated until nearly all the blue is taken up. In 24 cases of pleural effusion the author used this method. The dye was found in the urine four hours later, and was excreted sluggishly but continuously until the pleural cavity was emptied by free incision. The quantity of methylene-blue employed was five to 15 grains. Most of the cases received ten grains. [T. M. T.]

Pityriasis Versicolor, with Special Reference to Allen's Iodin Test.—J. Sobel (*Phila. Med. Jour.*, June 1, 1901) concludes his article as follows: (1) The old theory that only hidden parts are affected is no longer tenable; (2) Allen's iodin test is of marked value not only for class-room demonstration and for bringing into relief pale and hidden lesions of pityriasis versicolor, but also for differentiating parasitic or presumably parasistic skin affections from those of a non-parasitic nature; (3) Recurrences are in the main due to the overlooking and non-treatment of the suprapubic region and to the use of desquamative agents to the exclusion of penetrating ones. Both must be combined if a cure is desired; (4) Phthisical subjects, while affected in great measure on account of the hypersecretion of sweat, do not form the greater part of these patients. It occurs in all degrees of health and disease, a marked hyperidrosis, however, predisposing towards it; (5) Children and the very old are occasionally, though rarely, attacked; (6) It may occur in all shades from a very light pink to almost coal black (pityriasis nigra), the color being influenced by the condition of cleanliness, the circulation of the skin, the occupation of the patient, and the color of the underclothing. [T. M. T.[

The Functional Tests of Hearing.—W. L. Ballenger's (*Phila. Med. Jour.*, May 18, 1901) principles underlying the tests of hearing: (1) The normal range is from 16 to 48,000 vibrations per second. The upper limit of hearing is lowered after fifty years from senile changes; (2) When the conduction apparatus is diseased or obstructed the power to hear low tones is impaired or lost; (3) When the perception apparatus is diseased, the power to hear tones is generally impaired or lost; (4) The normal ear hears about twice as long as by bone conduction; (5) When the conduction apparatus is diseased or obstructed, bone conduction is increased and the time left in which the fork should be heard by air conduction is diminished; or bone conduction is often lengthened so as to exceed air conduction in duration; (6) When the perception apparatus is diseased, bone conduction is shortened, or is entirely absent, so that the relative time of hearing by air conduction is increased; (7) When the normal ear once clearly hears the tick of a watch upon approaching the patient, it will be heard as it is gradually withdrawn to a greater distance. The distance to which it may be withdrawn and still be heard varies from six to 18 inches. In some cases of impaired hearing there is inability to hear the watch as it is withdrawn beyond the point at which it is distinctly heard upon the approach. Rumbold thinks this is due to weakness of the tensor tympani muscle. The author has observed the sign in a number of poorly nourished and neurasthenic cases, in which it might well be true that there was muscle weakness, although he is not certain as to the significance of the sign. [T. M. T.]

Epistaxis.—C. N. Cox (*Med. News*, April 20, 1901) treats cases of this kind by cleaning out the nostril by gentle blowing, followed by mopping with absorbent cotton. In a large percentage of cases the situation of the bleeding can then be seen and applications made directly to it. Profuse hemorrhage can be stopped only by plugging the nostril. He uses a long strip (½ to ¼ inch wide) of plain sterile or iodoform gauze, passes one end of the strip through the nostril by means of delicate forceps or a probe, almost to the posterior pharyngeal wall, and then introduces successive instalments until the whole cavity is filled from behind forward. It is seldom necessary to introduce posterior plugs, but it may be done in the following manner: First prepare the tampoon by taking a piece of gauze or absorbent cotton of sufficient size, so that when it is properly folded it will be about 1-¼ inches long and ¾ inch in diameter. Tie firmly around its middle by a stout cord or silk ligature, leaving two free ends, each about fifteen inches long. Next, secure a thread or silk ligature ten or twelve inches long to the eye of a soft catheter. Pass the catheter along the floor of the nose and push it gently backward until it appears below the soft palate. Grasp the thread with a pair of forceps or hook, and draw it out of the mouth Secure it to one of the tampoon cords. Then withdraw the catheter and its thread from the nose. When the free end of the tampoon appears at the anterior naris, make traction upon it, and draw the plug up behind the soft palate, assisting the operation by placing the index finger in the nasopharynx, and guiding the plug to its place over the posterior naris or choana. The cord hanging out of the mouth should be led to the ear and secured there, to facilitate removal of the tampoon when the time comes. The cord in the nose should likewise be secured in some suitable manner, so as to prevent the plug from slipping out of place. The nasal cavity should then be filled with gauze in the manner heretofore described. [T. M. T.]

The Effects of Chloroform Narcosis upon the Blood.—Benassi (*Gazz. degli. Osped.*, February 17, 1901) draws the

following conclusions of the effect of chloroform narcosis upon the blood. (1) Chloroform narcosis produces a diminution both of the leukocytes and of the red blood cells. (2) This diminution is not in proportion to the duration of the narcosis and the quantity of chloroform inhaled. In a narcosis of equal length the blood changes will vary in different subjects. (3) This diminution leads to a change in the normal relation between the red and white cells. (4) It is more marked in the leukocytes than in the red cells. (5) The changes of form of the red cells seem to bear a relation to the duration of the narcosis and the quantity of the chloroform employed. (6) The disappearance of the alterations produced also bears the relation between the length of the narcosis and the quantity of the anesthetic employed. [T. L. C.]

Improved Test for Iodine.—Déniges (*Bull. Soc. Pharm. Bordeaux*, quoted in *Druggists' Circ. and Chem. Gaz.*, June, 1901) prepares a starch paper which keeps indefinitely, with no precautions, while it is so sensitive that it shows the presence of even 0.001 mg. in a drop of the solution. One gram of starch is dissolved in 10 c.c. of cold distilled water and 40 c.c. of boiling water added. After boiling a minute or two, constant stirring, the mixture is cooled, 0.5 gram of sodium nitrite is stirred in, and the mixture is then painted on both sides of writing paper, drying each side separately. A strip of this paper 1 cm. wide is moistened with the fluid to be tested and held at an angle, the moistened side up. One drop of a ten per cent. solution of sulphuric acid is then deposited at the top of the paper with a glass rod, and as it works its way down the coloration appears. [T. L. C.]

Dangerous Effect of Thyroid Extract on the Eye.—Coppez (*Arch. d'Opth.*) reports five cases of optic neuritis produced by thyroid extract. All the subjects had been taking the drug for obesity and had been getting rather large doses of it for some months, when amblyopia developed. About the same time the patients were troubled with nervousness, insomnia, anorexia, and shortness of breath. The amblyopia when once it became manifest developed rapidly. He believes the inflammation similar in type to that caused by tobacco and alcohol—a retrobulbar neuritis with central scotoma. Fortunately, the prognosis is favorable, for if the condition is recognized, the extract stopped, and suitable treatment instituted, vision will improve and may return to normal; though the improvement will be slow, if the vessels already begin to show some narrowing, or in other words, if secondary atrophy has already begun. He believes that the reason that more cases of this condition have not been reported is that the cause of the affection has frequently been overlooked. [T. L. C.]

Simplification of Dosage.—Adrian (*Bull. Gen. de Therap.*) suggests that all the more potent alkaloids should be prescribed in what he terms "therapeutic normal solutions," 1 c.c. of which shall contain the recognized maximum dose of the remedy. Thus the therapeutic normal solution of aconitine nitrate (Codex) would contain 1 milligram of the salt in each c.c.; of morphine hydrochloride, 1 centigram; of digitalin (Cordex) 2 milligrams; and so on. Since in Continental practice it is customary to direct these potent medicines to be taken in a certain number of drops, counted by a drop pipette (a practice which the author does not defend), it is necessary to employ a vehicle which gives a definite and not too great a number of drops to the c. c. This is furnished by the following mixture: Distilled water, 80 grams; alcohol, 90 per cent., 10 grams; glycerin, 10 grams. Thirty drops of this solution are equivalent to 1 c.c. or 1 gram. [T. L. C.]

Comedo.—Fox (*Atlas of the Diseases of the Skin*, Part V) relies more upon the mechanical treatment of the disease than the medicinal. He uses a scope or extractor in the shape of a small spoon, or dull curette with a U-shaped piece cut out of the free end. It makes pressure upon the skin partly around the sebaceous plug and is far more serviceable than a silver tube, as it is suitable to comedones of varying sizes. It is sometimes of advantage to scrape the face or the affected part with a ring currette before using the scoop, as it removes the heads of the comedones that are raised above the surface of the skin and by the temporary congestion which it induces, the subsequent expression of the fatty plug is rendered more easy. [T. M. T.]

Fifteen Grams of Fowler's Solution Accidentally Swallowed with no Poisonous Effect.—R. Lépine, (*La Sem. Med.*, May 15, 1901) reports the case of a man of 40 years, suffering from an alcoholic gastritis, who swallowed by mistake 15 grms of Fowler's Solution in a glass of sweetened water as he was about to retire. He was awakened from a sound sleep two hours later, suffering from intense thirst and pain in the stomach. He vomited persistently for several hours, but when seen by a physician 12 hours later, there were no serious symptoms and prompt recovery followed. Lépine believes that this condition was due to constriction of the pylorus, induced by the irritating effect of the arsenic. He calls attention to this contraction of the pylorus which he has also observed in experiments on animals, and believes that the pylorus may play the part of a protective spincter. The treatment after such conditions in any case in which it is impossible to produce emesis or to wash out the stomach, an effort should be directed towards promoting the contraction of the pylorus. The administration of 5 mg. of apomorphin is recommended, should it not succeed in producing vomiting, it would induce the contraction of the pylorus and when this has been accomplished, it would serve to prevent the absorption of the poison and lavage can then be practiced without undue haste. [T. L. C.]

Concerning the Effect of Digitalis-Constituents Upon the Isolated Mammilian Hearts.—(Langendorff's Preparation) L. Braun and W. Mager (*Sitzungsbericht d. Kais. Akademie d. Wissenschaften Bd.*, CVIII Hft. 8-9, Abth. 3, quoted in *Centralblatt fuer Innere Medicin*, June 8, 1901, No. 23). The authors conducted their experiments with various digitalis preparations (digitalis infusion, digitalis maceration, digitalin, digitonin, digitoxin) upon the isolated and partially atropinized mammalian hearts. Altogether the various preparations produced similar effects. According to the curves obtained, the following stages of digitalis poisoning are to be differentiated: (a) the stage of increased frequency and enlarged amplitude; (b) the stage of primary retardation; (c) the stage of the various irregularities, including the secondary retardation. The third stage of the poisoning under large doses after increase in the irregularities, causes cardiac arrest in systole. The individual phases of digitalis poisoning are not dependent upon the condition of the coronary circulation, but only dependent upon the toxic influence of the drug. The increase in amplitude as a rule occurs at once; a period of latency preceeds the increase in frequency, and rarely are these relations reversed. Semi-systolic contractions belong almost exclusively to the stage of irregularity. The influence of the digitalis is also characterized by various periodic changes in the action of the heart. The primary retardation is caused by a lengthening of the pauses and diastoles and the secondary to the increase of the pauses and systoles. The influence of digitalis in the stage of secondary retardation persists in spite of atropinization and is due (upon the excised heart) purely to an action upon the ganglio-muscular apparatus. The functional activity of the heart under moderate digitalis administration is first of all increased, and then diminished. An immediate increase in frequency before cardiac arrest never occurs in the isolated heart. [M. R. D]

The Treatment of Scarlatinal Nephritis.—Kerley (*Med. News*, June 15, 1901) states that the diet in these cases is to be milk, broths and thin gruels. The exclusive milk diet is not necessary, and, as the patient soon tires of it, it may be plain, with lime water, or mixed with thin gruel; it may be peptonized, or in the form of junket. The author usually orders two or three feedings a day of thin gruel well salted, or gruel mixed with a very small quantity of animal broth. Six ounces of barley gruel mixed with one or two ounces of chicken broth will be found very agreeable to the majority of children. When in the form of rennet, cream may be added. Alcohol should never be used in any form. Most important is it to see that the bowels are kept open—two or three stools daily. This is generally easily accomplished by givingsmall doses of calomel (1-10 grain every hour until one grain has been given). This should be given every three or four days with two to four ounces of citrate of magnesia the intervening days, if necessary. Aconite in ¼ minim doses every two hours to a child three years old produces moderate diaphoresis. If the aconite fails, hot air is generally successful. If diaphoresis is not

produced, the use of the hot pack in connection with the dry air is advised. Hot poultices may be of service. The remedy pre-eminent to all others is the hot-water flushing of the colon. For a child three years old 16 to 20 ounces of normal salt solution, 110° F., is introduced into the colon by means of a rectal tube which should be inserted at least ten inches. A pint to a pint and a half every six hours answers in the majority of cases and will be retained by most patients. After three or four flushings in a stubborn case, the kidneys often begin to act and soon there is a fairly free flow of urine. The child must be kept in bed until the urine has been normal for two weeks.

[T. M. T.]

The Treatment of Furunculosis by Sulphur Preparations.—von J. Russlow (*Medicinskoje Obosrenje*, September, 1900) states that the most frequent cause of furunculosis is a staphylococcic infection of the excretory ducts of the skin. In addition to this cause, however, there are other predisposing factors to be taken into consideration, some of which are probably of a local nature, like external irritation, and others of a general nature, like deficient bodily nourishment, chronic intoxications, such as alcohol, uremia and cholemia. But even in the entirely healthy individual this affection may occur, as for instance in young persons during puberty. The treatment varies, but most frequently it must be of a roborant nature. Frequently, however, we are compelled to have resource to such remedies that have proven themselves empirical, like arsenic, yeast, and particularly sulphur. The author for twelve years has employed sulphur in the treatment of cases of furunculosis where the etiology was obscure, and claims that he has undoubtedly observed marked efficiency of this remedy; the results were best in well developed and strong patients with an abundance of subcutaneous fat. At first the author employed flower of sulphur, but now on account of the arsenical contamination of this preparation, employs the purified sulphur. [M. R. D.]

Contribution to the Treatment of Scabies.—von Schumann Leipzig (*Allgem. med. Centralztg.*, 1901, No. 10). According to the author a soap containing nicotianin has proven an efficacious remedy in the treatment of scabies, quickly and surely killing the acarus and curing the eczema. The first inunction generally causes nausea and anxiety, occasionally also dizziness and vomiting; in rare cases these manifestations, even become serious. On account of these symptoms of nicotism the author advises against the application of this remedy in private practice, as well as in children and poorly nourished individuals, but recommends it for hospital practice. [M. R. D.]

The Employment of Suprarenal Extract in the Treatment of Spring Catarrh.—Perret-Hartennes (*Die ophthalm. Klinik*, quoted in *Zeitschrift fuer Augenheilkunde*, May, 1901 pp. 400) believes to have found in suprarenal extract a useful remedy for spring catarrh. He recommends it particularly for the beginning of the affection, which is, as is well known, characterized by injection of the palpebral and bulbar conjunctiva. On account of its power to produce local anemia by the employment of large doses the remedy particularly removes subjective symptoms. Even in the latter stages of the disease when, in addition to the vernal conjunctivitis, milky deposits upon the cornea occur, continued use of the remedy is valuable. [M. R. D.]

The Treatment of Fermentative Conditions Associated with Chronic Gastritis.—Hemmeter (*International Med. Magazine*, June, 1901) directs his whole attention to restore the impaired motor function and says that nothing can take the place of lavage. The gastric spray is useless for this purpose. Intragastric electricity is useful in restoring the lost muscular tonicity. The faradic current is best in the treatment of impaired peristalsis and galvanic more useful in allaying gastric pains. When peristalsis alone is impaired, the author uses strong faradic current of high tension, the positive pole within the stomach and the negative alternating in the epigastrium and over the spine. The strength is about equal to that of one freshly prepared sending four stimulations into the stomach per second, or 240 per minute. As to diet, there is no food which will agree with the patient, unless peristalsis is restored. If the motor function of the stomach cannot be restored after the use of mechanical and medicinal means, then surgical means may have to be resorted to. The removal of a hyperplastic pyloris generally brings every sign of gastric fermentation to an end. He states that the diet in these conditions is not so important as how to make the stomach contract and empty its contents into the duodenum. [T. M. T.]

Gastric Gas.—Benedict (*Internat. Med. Mag.*, June, 1901) gives the milder measures in the treatment of the above condition as follows: Unless weakness prevents, immediate lavage should be performed. Not over 1000 c.c. should be introduced at once, and preferably not over 500 c.c. As large a tube as possible should be employed, and after trying various antiseptics, he advises a four per cent. solution of soda and borax, diluted about ten times as it is introduced. As soon as the stomach has become reasonably free from detritus and mucus, hydrogen peroxide should be used quite freely. It is often impossible to complete the lavage at one sitting. [T. M. T.]

Oral Sepsis as a Modifying Factor in Gastric Affections. Herschell (*Internat. Med. Mag.*, June, 1901) gives the following treatment of a septic mouth: (1) All stumps must have the septic pulps removed and be properly filled and capped; or, of course, if too far gone, extracted. (2) All spicules of tartar are removed from the necks of the teeth under the edges of the gums. (3) The pus pockets are then syringed out with hydrozone or some other reliable preparation of hydrogen dioxid. (4) A saturated solution of nitrate of silver or protargol or argentamin or equivalent preparation is then to be applied upon small points of wood to the interior of the pus pockets. It is best to take one tooth at a time and make a complete application to this before passing to the next one. In sensitive mouths it may be impossible to treat more than one tooth at a sitting. (5) An antiseptic and stimulating mouth wash is prescribed for the patient. A very good one consists of a one in ten solution of listerin or euthymol. (6) A proper tooth powder especially adapted to the state of the patient's mouth should be given. [T. M. T.]

The Employment of Water in Pediatrics.—Schmid-Monnard (*Zeitschrift fuer Krankenpflege*, 1901, April) relates the experiences that he has had with the employment of water in treating diseases of children. He states that warm baths as have been recommended for chlorosis, may, with some modifications, be used in the treatment of anemic children. The author recommends baths of three to five minutes' duration at a temperature of 35 C. which is increased to 40 C. shortly before the termination of the bath, by the addition of hot water. The patients are not dried after the bath, but are enveloped in a previously warm sheet, which then gives rise to perspiration. [M. R. D.]

The Injection of Gelatine. Experimental and Clinical Study, by Mariani (*Policlinico* 1901, January). The conclusions of the author are that gelatine injections previously warmed by means of a water bath to 38 C. and employed in a 2% solution subcutaneously may be employed in quantities of 200 ccm. in 24 hours without harm, and are well absorbed. The injections may increase the coagubility and consistency of the blood, but always within normal precincts, although the physiological variations may be somewhat modified. In the treatment of aneurisms the author observed no recovery, but marked improvements. The hemostatic action of the injections is often remarkably prompt, but always of but temporary duration. [M. R. D.]

The Treatment of Incontinence of Urine in Children with Rhus Aromatica. Perlis (*These de Paris Gaz. hebdomaire*, 1900. Nr. 88) recommends the fluid extract and not the tincture. The unpleasant odor and taste are to be prevented by the addition of an aromatic syrup. According to age and other circumstances the dose may be increased to eighty drops a day. After 6 or 12 days the incontinence may become worse and so remain for 10 days, followed, however, by rapid improvement: during the exacerbation considerable, but thin, urine is voided. Recovery should take place in from 20 to 40 days. Among 156 cases treated with this remedy, some of which were taken from literature, others described by the author himself, there were 102 recoveries, 41 improvements and 13 failures. This manner of treatment may be employed in cases de-

pending upon any etiological factor, but other remedies should not be neglected. The author has never observed deliterious symptoms associated with this treatment. [M. R. D.]

A Case of Addison's Disease Which Improved under the administration of Suprarenal Extract.—Edel (*Muench. Med. Woch.*, 1900, No. 52) reports a case of Addison's Disease which had existed for six months, and in which there was an increasing and evident improvement both of the subjective and objective symptoms under the administration of suprarenal extract; particularly the strength of the patient increased, while the pigmentation gradually decreased. [M. R. D.]

The Role of the Leukocytes in the Absorption of Certain Medicines Introduced under the Skin and into the Peritoneal Cavity. Marie. Louis René Montel. (*Gaz. Heb. de Med. et de Chirur.*, April 21, 1901. 48 me. Année, No. 32. *Bordeaux Thesis.* 1900-1901. No. 2).

Montel has studied the **method of absorption of calomel, iodoform oil and sodium salyciiate.** Calomel injected under the skin or into the peritoneum is for the most part taken up by the leukocytes either in the form of reduced mercury and sublimate or in the form of small crystals of calomel. Under the influence of the cellular activity of the leukocytes,, calomel becomes changed into sublimate and reduced mercury. The nodules that result from the subcutaneous injection of calomel are due to a defensive process of the organism. Under the skin, as well as in the peritoneal cavity, calomel is absorbed during a stage of hyperleukocytosis due to a positive chematoxis of the leukocytes which is preceded by a stage of hypoleukocytosis and negative chemotaxis. The stage of hypoleukocytosis varies in length depending upon the size of the injected dose. Hyperleukocytosis is the evolution towards cure, and it is the polymorphonuclear and the large mononuclear leukocytes that seize the mercurial salt. Iodoform oil is absorbed and transported by the leukocytes. This absorption seems to be due particularly to the large mononuclear elements. It is accompanied by marked hyperleukocytosis. In an animal who has received an hypodermic injection of sodium salycilate the white bloodcorpuscles treated by perchloride of iron are found to be studded with black points that indicate the formation of salycilate compounds of iron. For these different substances the absorption, almost exclusively cellular, is due to the leukocytes which, circulating in the blood current, are carried to the point at which their action is needed. [J. M. S.]

Carbonic Acid Gas Applied for Disturbances of Menstruation.—Gustav Loimann (*Wiener Klin. Woch.*, April 11, 1901) discusses this subject. In the second half of the eighteenth century, **carbonic acid gas** was first used locally in baths and douches. Loimann has seen excellent results from its use in the disturbances which accompany menstruation, dysmenorrhea, oligomenorrhea, and amenorrhea. Most of the towns which boast of carbonic acid waters have arrangements for giving carbonic acid gas baths. As the gas penetrates the clothing, it is unnecessary to undress. Vaginal douches may also be given. Loimann has devised a practical contrivance for carbonic acid gas douches. The mucous membrane of the uterus becomes reddened, with a great increase in the secretion. Menstruation generally appears earlier and more copiously than usual, after repeated douches of carbonic acid gas. Especially are those women, who show no abnormality of the genitalia, successfully treated. Even if the mucous membrane of the uterus be altered, carbonic acid gas douches may cause the appearance of menstruation. It must not, however, be attempted during pregnancy, or abortion will occur. [M. O.]

The Poisonous Effects of Alcohol in Certain Nervous Diseases.—Wagner von Jauregg (*Wiener Klinische Woch.*, April 11, 1901) states that **alcohol** does not affect all people alike. Yet it acts as a poison upon the nervous system, whether by an effect upon the nerve centers, or upon their blood supply. **Individual disposition** will influence the occurrence of delirium tremens which is seen only after long continued **alcoholism.** Wagner von Jauregg believes that in chronic **alcoholism a poison is produced** in the body under the effect of the alcohol, causing tremor, vomiting, delirium, etc., a **poison** which is undoubtedly due to the alcohol, yet it is not the alcohol itself, as more alcohol will cause the disappearance of the symptoms. Its real effect is seen after the alcohol has all been excreted. This he calls an **alcohologenous poison.** It resembles the poisons of bacterial origin seen in the infectious diseases. Leucocytosis occurs, with an increase in the polynuclear and a decrease in the mononuclear leucocytes, with the sudden appearance of eosinophilic cells after the delirium is over. Then the polynuclear leucocytes decrease and the mononuclear leucocytes increase relatively, while the eosinophiles may reach an abnormal amount. These changes in the blood are much like those seen in croupous pneumonia. Albuminuria also is seen. This poison has its maximum effect when no alcohol is taken. He advises continuing enough alcohol to prevent delirium, decreasing the amount gradually. **Polyneuritis** and the **polyneuritic psychoses** are also explained as the effect of this alcohologenous poison, just as they can be caused by the infectious diseases. As alcohol also causes indigestion, it acts as a double cause for the polyneuritic psychoses. But it is possible that from the deleterious influence of the alcohol upon the liver, secondary poisons are elaborated in the liver which, entering the circulation, cause these psychic manifestations. [M. O.]

Sitophobia of Enteric Origin.—Einhorn (*Journal A. M. A.*, June 15th, 1901) read a paper before the New York Academy of Medicine on May 16, 1901, on **"Sitophobia of Enteric Origin."** The author defines sitophobia as meaning "fear of food." He uses the term sitophobia only for those conditions which result from bad consequences in mentally sound people, and excludes the cases which occur in the insane. He uses the term "sitophobia" as meaning "fear of food, when due to some intestinal disorder. He gives a report of three cases and remarks that sitophobia of moderate degrees is of common occurrence. The author discusses the treatment of this condition, mentioning that it is important that the patient should be made to eat sufficient quantities of food. The bromides in nervous conditions, and codein in painful affections are the most valuable medicaments. [T. L. C.]

.The Treatment of Meniere's Disease.—(*Rev. de Therap.*, LXVII, No. 19). Whenever the symptoms of Méniére's disease are caused by any other condition, as accumulations of cerumen, inflammation of the ear, etc., the underlying trouble is to be treated. The management of Mèniére's disease, properly so-called, is outlined by Dr. Pritchard (quoted in *Merck's Archives*, May, 1901) as follows: (1) In the apoplectic form, rest in bed, counter-irritation by means of blisters, and large doses of bromides are indicated. In some cases pilocarpine may be tried to restore the hearing. However, in most cases of this form, the treatment is unavailing. (2) The epileptic form offers, in the author's opinion, much better chances of improvement under the administration of bromides in large doses, or still better, hydro-bromic acid in doses of 48 to 60 minims. In a few cases, sodium salicylate is productive of good results. Large doses of quinine have not given good effects in the author's hands, but quinine in small doses, combined with iron and strychnine, is an efficient tonic. Concomitant otitis calls for its own treatment. Occasionally a blister will improve the hearing and diminish the tinnitus turium. The use of pilocarpine is seldom advisable.

Operative interference appears to have a promising future, judging by a recent case of Dr. Balance. [T. L. C.]

Therapeutic—Abstracts—NEEFa— — —— — — —FOUR

Sulphur in Furunculosis.—By treating a case of furunculosis for twelve years with alternate administration of sulphur and arsenic, Roussloff (*Rev. de Therap.* quoted *Merck's Arch.*, May, 1901) found that sometimes the favorable results were due to the one, at other times to the other of these remedies. In the anemic, neurasthenic, and feeble the preparations of arsenic seem to deserve the preference, while robust individuals with a well-developed subcutaneous fat-tissue do better on sulphur. The mode of its action in furunculosis is uncertain. Possibly its laxative action contributes towards its effect on the furuncles. But the chief active element is probably the sulphuretted hydrogen that is formed in the intestines from the sulphur ingested, and which, on reaching the skin, exercises a germicidal effect on the micro-organisms. [T. L. C.]

lence. Several hours afterward she was attacked by vertigo and severe vomiting and collapse followed. She was revived by the use of alcoholics and injections of ether and caffeine, and the next day she was in her usual health. [T. L. C.]

Ocular Massage.—At the last meeting of the Medical College of Vienna, (*La Semaine Med.*, March 20, 1901), M. Elschnig spoke favorably of the results of ocular massage in the treatment of chronic tracoma and its complications, recurrent keratitis, corneal ulceration, etc. Massage should be practiced by means of a small glass rod conformed to the shape of the conjunctival cul-de-sac beneath which it is introduced, having previously been placed in a solution of cyanide of mercury (1-4000). Pressure is exerted with the index finger upon the eye lid over the glass rod. At the beginning of treatment a 2% solution of cocain is used as the procedure is painful. This is unnecessary later, the application of cold being sufficient. The treatment should be practiced daily at first and then as improvement is observed, every second or third day, and continued for about five minutes at a time. The massage exercises an equally favorable action upon the chronic catarrhal conjunctivitis, especially when accompanied by hypersecretion or retention of the secretion of the Meibomian glands. In phlyctenular conjunctivitis it is an excellent adjunct to medical treatment. This is also true in cases of recurrent chronic catarrhal conjunctivitis chalazions, dacryocystitis, etc. Massage favors the absorption of hemorrhages of the anterior chamber as well as exudates of the iris. It also exerts a favorable effect upon circulatory troubles of the globe. [T. L. C.]

The Treatment of Arterio-sclerosis by Subcutaneous Injections of Inorganic Serum.—Truneck (*La Semaine Med.*, April 24, 1901) employs a solution to which he has given the name of inorganic serum, and which he recommends shall be prepared in the following manner: Sulphate of soda, 0.44 c; chloride of sodium, 4 gm.: phosphate of soda, 0.15; carbonate of soda, 0.21; sulphate of potassium. 0.40; distilled water, 9.5 to make a hundred grams. Injections are made with this fluid subcutaneously, and it acts by increasing the alkalinity of the blood and causing the solution of the chalky phosphates which become encrusted upon the arterial walls. It increases organic combustion, and regulates the functions of the various organs, especially those of the heart and vessels. [T. L. C.]

Morphia as an Antidote in Belladonna Poisoning.—P. D. Stracham (in the *Lancet*, April 27, 1901) reports a case of belladonna poisoning in which morphia was used as the antidote. The case was that of a boy, five years of age, who had been given a large tablespoonful of glycerine of belladonna. The symptoms of belladonna poisoning developed rapidly. The sulphate of morphia was given hypodermatically on several occasions and recovery followed. The case is of particular interest in view of the fact that the child showed a remarkable tolerance for belladonna and that morphia was an effective antidote. [T. L. C.]

Subcutaneous Prosthesis. (*Glasgow Med. Jour.*, May, 1901).—By subcutaneous injections of white vaseline—a mixture of liquid and solid paraffin (melting point, 40° C.) —sterilized by heat, and injected with a Pravaz syringe, there is produced at seat of injection a firm, rounded swelling, which remains unaltered. By this means Gersuny remedied a deficiency of both testicles (after castration); he also increased the size of the uvula in two cases in which uranoplasty had been done, and so brought about a marked improvement in speech. By such deposits of firm ointment masses under the skin one is able to produce subcutaneous prosthesis, *e.g.*, raising depressed scars, improving sunken cheeks or "saddle" noses. One may also by this plan fill up large wound cavities, substitute losses of brain substance, make movable joints after resection, and close hernial openings. The procedure can be carried out painlessly by the preliminary injection of a single drop of a 5% solution of cocain.—(*Centralblatt fuer Chir.*, No. 5, 1901). [T. L. C.]

Artificial Modification of Toxins with Special Reference to Immunity.—In an extensive paper on this subject (which appears in the *Journal of Hygiene*, Vol. 1, No. 1). James Ritchie, of the University of Oxford, draws the following conclusions: (1) Toxins may be modified by the action of heat, by the action of chemical reagents, by the action of the animal body, and by the action of other toxins. (2) Modification by heat is a process of destruction, and is accompanied by loss of toxicity, of antigenic power, and of immunizing power. (3) Modification by chemical reagents is a process of destruction, and is accompanied by loss of toxicity, of antigenic power, and of immunizing power. (4) Modification by the animal body is a process of destruction, and is accompanied by loss of toxicity, of antigenic power, and of immunizing power. (5) Modification by other toxins is a process of destruction, and is accompanied by loss of toxicity, of antigenic power, and of immunizing power. (6) The modification of toxins by heat, by chemical reagents, by the animal body, and by other toxins is a process of destruction, and is accompanied by loss of toxicity, of antigenic power, and of immunizing power. (7) The modification of toxins by heat, by chemical reagents, by the animal body, and by other toxins is a process of destruction, and is accompanied by loss of toxicity, of antigenic power, and of immunizing power. (8) The modification of toxins by heat, by chemical reagents, by the animal body, and by other toxins is a process of destruction, and is accompanied by loss of toxicity, of antigenic power, and of immunizing power. (9) The modification of toxins by heat, by chemical reagents, by the animal body, and by other toxins is a process of destruction, and is accompanied by loss of toxicity, of antigenic power, and of immunizing power. (10) The modification of toxins by heat, by chemical reagents, by the animal body, and by other toxins is a process of destruction, and is accompanied by loss of toxicity, of antigenic power, and of immunizing power.

Clavus.—Fox (*Atlas of the Diseases of the Skin*, Part V) does not recommend hot bathing, poulticing, or oil dressings to soften corns, as they are rarely successful. He advocates the use of a saturated solution of salicylic acid in flexible collodin to be painted on the corn several days in succession. The first application generally gives great relief, even in very bad cases. After each application a layer of the horny epidermis can be readily scraped off with a currette or the finger nail. This should be done until a smooth surface is left. The salycilic solution is not only useful in corns, but also in callosities and all other keratoses. If used in soft corns, care must be had in applying and the toes must be kept apart by absorbent cotton. A simple method for hard corns and callosities is to rub the surface daily with sand paper and then apply a drop or two of tincture of iodine. Another treatment is to take an ounce of strong vinegar, add a sufficient quantity of bread crumbs to make a poultice. Let stand for a half hour and apply at night. The next morning the soreness will be gone and the corn can be generally picked out. In obstinate cases two or more applications must be used. [T. M. T.]

Allotropic Forms of Silver.—From calorimetric determinations of the rise of temperature resulting from the solution of pure silver, in different forms, in mercury. Berthelot (quoted in *Druggists' Circ. and Chem. Gaz.*, June 1901) considers that the former metal exists in at least four allotropic conditions. The silver employed was: (1) beaten silver leaf; (2) the metal otained from this leaf. maintained at 500° to 550° C. for twenty hours in a current of oxygen; (3) silver crystallized in fine needles, obtained by the slow electrolytic decomposition of a 10 per cent. silver nitrate solution; (4) precipitated silver, obtained on a copper foil suspended in a dilution of nitrate dried (a) at ordinary temperatures, (b) at 120° C.; (5) the same as number 4, dried at a temperature approaching dull redness. Of these, the third and fifth give figures which are practically identical and point to the fact that crystalline silver and its amorphous form dried at 120° C. are transformable without appreciably modifying the thermal constant. The other three, however, show marked differences in molecular arrangement. [T. L. C.]

Copper in Nux Vomica Seeds.—Beitter (*Brit. and Colon. Drug.*, quoted in *Druggists' Circ. and Chem. Gaz.*, June, 1901 has made experiments to check Rutherford Hill's discovery of copper in nux vomica seeds. He tested several samples of tincture of nux vomica. After evaporating and incinerating the residue, and treating the ash with diluted sulphuric acid, he added ammonia to the liquid, but he did not observe the greenish-blue color observed by Rutherford Hill. He then made use of more sensitive reactions for copper salts. Trying that of Klunge, which affords a reddish-violet coloration with aloin, he found that the preparations of strychnos nux vomica, s. gaultheriana, s. ignatii, and s. potatorum gave the copper reaction with aloin. No color was produced with the preparation of s. laurina. Schönbein's test was also tried (blue tincture of resin guaiac and hydrocyanic acid). With this all the preparations named, including those of s. laurina, gave the blue color. [T. L. C.]

Chemistry of Oil of Rue.—H. Thoms (*Ber. deutsch. pharm Gesel.*, quoted in *Druggists' Circ. and Chem. Gaz.*, June, 1901) has subjected an authentic sample of oil of rue to chemical examination. He has found it free from terpenes and to consist for the greater part of normal methyl nonyl ketone. There is also present about 5 per cent. of normal methyl heptyl ketone, $CH^3—CO—(CH^2)^6—CH^3$. This is the first mention of the occurrence of this ketone in a volatile oil. The ketone $C^{12}H^{24}O$ mentioned by Williams could not be found nor could lauric aldehyde be detected. There were also present small quantities of free fatty acids and traces of a phenol. [T. L. C.]

Poisoning by Star Anise.—Etienne reports (*Klin-therap. Woch.*, quoted in *Druggists' Circ. and Chem. Gaz.*, June, 1901) a case of poisoning by star-aniseed. A woman infused about an ounce of the drug in water allowing the infusion to remain on the stove for twenty-four hours so that by evaporation it became reduced to a few teaspoonfuls. She drank the whole of this with the view of relieving flatu-

lowing conclusions upon this most important subject. (1) Tetanus toxin under the influence of hydrochloric acid loses with comparative readiness its virulently poisonous properties. It does not, however, so readily lose its capacities of producing immunity and when all trace of toxicity has disappeared the capacity of producing immunity still remains. The less poisonous substances produced in the modified toxin are probably of the nature of toxoids: (2) Tetanus toxin is also susceptible to the action of alkalies such as sodium hydrate and sodium carbonate, under which it again loses its toxicity. (3) Ricin is very resistent to the action of hydrochloric acid. There is evidence here also that when the toxicity is destroyed the capacity of producing immunity also remains. (4) Abrin is also resistent to the action of hydrochloric acid but it is relatively susceptible to that of sodium hydrate. (5) Diphtheria toxin is very resistent to the action of hydrochloric acid but it is relatively susceptible to the action of sodium hydrate. In the case of toxin which through the latter agent has had its toxicity destroyed there still remains evidence of the capacity of producing immunity. [T. L. C.]

Experiments with Quinin on the Voluntary Muscles During Chloroform Narcosis.—J. de Tarchanoff (*Bulletin de l'Academie de Med.*, April 18, 1901) has found that upon injecting 2% solution of hydrochlorate of quinin into the thigh muscles of a frog and following this injection by the administration of chloroform that the mucles so injected became rigid under the influence of the chloroform. They lose their elasticity and excitability and this condition lasts for several days. He has found that if the heart muscle is influenced by quinin the heart will stop in diastole and that the animals are unable to bear the chloroform. It is evident that the muscles injected with quinin are not susceptible to the action of the chloroform, but this is not true if ether is employed. [T. L. C.]

The Poisonous Effects of Trional.—Stuart Hart reports (in the *American Journal of the Medical Sciences* for April, 1901, quoted in *Medicine*, June, 1901) a case of multiple neuritis and hematoporphyrinuria following the prolonged ingestion of trional. Frequent reference has been made to the same condition as a result of the prolonged administration of sulphonal, and the belief has been held that trional was quite free from dangerous effects, a conclusion which must be modified in the light of Hart's experience. Nevertheless, the number of cases so far reported of untoward effects following the use of trional are comparatively insignificant if one thinks of the enormous extent to which the drug has been employed. This is a well recognized relation between nervous disturbance and the use of coal-tar derivatives. In the opinion of Hart, neuritis has distinctly increased since the introduction of these remedies. Unsteadiness of the gait, and high-colored or bloody urine have been noted as a result of the prolonged administration of trional. The patient observed by Hart was a woman 50 years of age, who had been a sufferer from nervous depression, insomnia, and gastric disturbance for twenty years, but who, beyond a moderate anemia, presented no signs of organic disease. She had become habituated to the use of trional, but was induced to gradually give it up. A return of her insomnia early in 1899 led to a resumption of the use of the drug in fifteen-grain doses every second day. This was continued until April 20, when there was severe colic, nausea, and vomiting. Five days later urine became dark-red, and on the following day diminished to ten ounces, almost black in color. From this urine a substance giving the characteristic spectrum of hematoporphyrin was obtained. Early in May the patient complained of severe pain in the elbow and a weakness of the legs. There was diminished sensation, and two days later there was marked loss of power in the extensor groups of the left arm and the left leg. The symptoms of the acute paralysis remained for some days and were followed by slow improvement. At the end of a week there was slight voluntary extension of the fingers and toes, but the electrical reactions still showed degeneration, and it was many weeks before the extensors reacted normally to the galvanic current. [T. L. C.]

Formulae.

NEURALGIA AND ALLIED CONDITIONS.

For Neuralgia *Encyclopedia of Practical Medicine* advises:

℞

Ext. stramonii		
Ext. hyoscyami	āā	gr. 1/5
Ext. belladonnæ		gr. 1/10

M. Ft. pil. No. i. S. One four times daily.

Or,

℞

Thiol		
Aquæ destil.	āā	ʒi

M. S. Apply locally.

It is claimed that **Lumbago** is benefited by applications of equal parts of tincture of iodine and liquid ammonia in collodion.

Dr. H. Lyon Smith writes to the *Lancet* (says the *Penna. Med. Journal*) that he has been using a compound for two or three years with most rapid relief of headache, backache, fever and malaise and without any untoward symptoms. His formula is as follows:

Acetanilid		gr. xxx
Spt. chloroformi		
Spt. camphoræ	āā	f.ʒii
Sodii Salicylati		ʒ iss
Aquæ	ad	f. ℥ vi

M. S. One ounce every four hours until relieved.

For Toothache.—*Gazette Hebdomadaire de Medecine et de Chirurgie* for April 14 ascribes the following to Guillaumin, (quoted by *N. Y. Medical Journal*):

℞

Carbolici acidi crystalli abs.	
Menthol	
Cocainæ hydrochlori.	equal parts
Chloral. hydrat.	
Guaiacol	

M. Triturate in a mortar. A pasty liquid is thus obtained. easy of employment, and both caustic and anesthetic. The caustic action may be augmented by increasing the carbolic acid.

For Neuralgia.—(*Maryland Medical Journal*).

℞

Ammonii chloridi		ʒ iii
Qr. gelsemii		f. ʒ ii
Ext. glycyrrhiz. liq.		f. ℥ ss
Aquæ chloroformi	ad	f. ℥ vi

M. S. One-half ounce every four hours until the pain is relieved.

Recent Treatment of Sciatica.—Rodriguez (*Jour. de Neurologie*, quoted in the *International Medical Magazine*) recalls the results obtained by Crocq with ichthyol administered internally, in the form of capsules of 10 cg. each (6-8 per day), and by rubbing it upon the painful areas associated in a liniment with chloroform. Another mode of treatment extolled by Crocq consists in hypodermic injections of glycerophosphate of soda in solution, 25 parts in 100 of distilled water. Robin and Billard prefer a mixture of several phosphates, viz.:

Glycerophosphate of lime	.04;
" " magnesia	.04;
" " potash	.04;
" " soda	.13;
Distilled water	1.00.

M. S. For one injection.

These solutions should be prepared with all antiseptic precautions and kept in sealed glass tubes to prevent decomposition. One to 4 injections are given per day; continued 8-10 days; they often give good results. If at that time the pain is not diminished, it is necessary to look for other therapeutic measures.

Lumbago.—The *Maryland Medical Journal* recommends:

℞

Pulv. ipecacuanhae et opii.	gr. xxx

M. et Ft. chart., No. I.

S. Take with a hot drink at bedtime.

Indication.—Used in acute cases as result of catching cold.

Treatment of Rheumatic Pains.—The following prescription is given by Maurange in (*Gazette hebdomadaire de medecine et de chirurgie*, April 18, 1901):

℞

Methyl salicylat. (oil of wintergreen	25
Guaiacol	5
Ol. of terebinthini	5
Lanolin	15
Petrolati	25

M. Ft. Unguentum.

Treatment of Indigestion.—Dr. J. M. G. Carter states (*Medical Fortnightly*) that he uses the following prescription for indigestion:

℞

Acidi carbol	gtt. vi
Tinct. gelsemii (U. S. P.)	
Glycerini	
Vini colchici.	āā f. ʒ ss
Tinct. opii camph.	f. ʒ ss
Elix. simplicis	f. ʒ i

M. S. One teaspoonful before each meal and at bedtime.

GYNECOLOGY AND OBSTETRICS.

Dysmenorrhea.—*Medical Record* quotes Bedford Fenwick, who recommends in dysmenorrhea with nerve storms and without local disease, in hospital or among the poor after each meal:

℞

Phosphori	gr. 1-50
Ferri valerianat.	
Zinci valerianat.	
Quin. sulph.	
Ext. aloes	āā gr. i

M. S.

The following mixture should be taken as soon as the pains commence, and may be repeated in three hours if they are not altogether relieved:

℞

Tinct. cannabis indicæ	*m* x
Syr. Chloral hydrat.	*m* xx
Glycerini	f. 3 i
Aquæ camphor.	ad. f. ʒ i

M. For one dose.

It is well to give only two doses in any given twenty-four hours, because many women show symptoms of considerable excitement, with giddiness and even delirium, after repeated doses of Indian hemp. The use of cod-liver oil is still more important.

As an Anodyne and Antispasmodic, M. G. Price recommends:

℞

M. et Hyoscyamii	
Glonoin	āā gr. 1-50
Cocainæ hydrochlor.	gr. 1-8

S. At dose, watching for physiological effects.

Vomiting of Pregnancy, Weil advises:

℞

Menthol	2
Ol. oliv. opt	10

M. S. Ten drops on sugar when nausea occurs.

In Dysmenorrhea *Medical Record* advises:

℞

Succi conii	f. 3 vi
Potass. brom.	ʒ iij
Spt. Chloroform.	f. 3 ij
Aquæ camphoræ	q. s. ad f. ʒ viij

M. S. Two tablespoonfuls at dose.

Meno- and Metrorrhagia:

Ergotin. Bonjean	gr. iij
Stypticin	gr. ¾
Pulv. Cinnamomi	gr. j
Pulv. Myristicae	gr. i

M. Ft. in capsul No. I. S. One to two capsules three to four times a day, according to severity of case.

Stypticin	gr. xii
Hydrastininæ Hydrochlor.	gr. viii
Ext. Ergotæ fl.	f. ʒ ii
Ol. amygdol. amar.	gtt. v

M. S. One-half to one teaspoonful three to four times a day. In cases not depending on grave organic diseases, as cancer of the uterus or calcareous arteries, this combination may be regarded as a specific.—W. J. Robinson.—*Merck's Archives.*

Treatment of Amenorrhea.—(*Revue medicale*, March 27, 1901) gives the following:

Apiol crystallizat.	1
Ol. sterilizat.	5

M. S. Fifteen minims may be injected subcutaneously every day.

EYE, EAR, NOSE AND THROAT.

Antisepsis of Nasopharynx.—M. Malherbe, in the *Presse Medicale* for February 16 (quoted in *Med. Review of Reviews*), gives the following prescriptions to be used for anterior douches or by atomization as the physician may choose:

For Atomizer.—Resolvent and antiseptic:

℞

Sodii salicylat.	gr. xx
Aquæ destillat.	f. ʒ ixss

M.

Resolvent, antiseptic and astringent:

℞

Zinci sulphatis	gr. v
Aquæ destillat.	f. ʒ ixss

M.

When there is much pain:

℞

Morphiæ hydrochlor.	gr. ¾
Aquæ destillat.	f. ʒ iiss

M.

For Inhalation.—At the same time inhalations are prescribed:

℞

Tr. benzoin. comp.	f. ʒ iii
Chloroformi	*m* xxv

M. S. A teaspoonful in a pint of boiling water.

Or, when the inflammation has diminished, the following formula is recommended:

℞

Ol. eucalypti	6
Magnesiæ carbonat.	4
Aquæ destillat.	90

M. S. A teaspoonful in a pint of boiling water.

Coryza.—For coryza, writes Dr. Milbury (*The Laryngoscope*), I have found nothing better than atropin, 1-1000 of a grain every fifteen minutes until six doses are taken, and then every hour until the throat becomes quite dry, after which continue with the same drug every two or four hours for about twenty-four hours or longer. With this may sometimes be associated with advantage camphor, gr., ⅛; arsenic, 1-240; quinine, ½; morphin, 1-60—to be given three or four times daily or oftener.

An Insufflation to keep the nose healthy is recommended by B. H. Brodnax:

℞

Menthol	gr. iij.
Acidi borici	3 i
Bismuth. subnit.	3 iss
Pulv. benzoin.	3 ss

M. S. Reduce to a fine powder, and inhale forcibly.

Acute Nasal Catarrh.—

℞

Morph. hydrochl. seu sulphat.	gr. v
Pulv. acaciæ	3 ij
Bismuth. subnit.	3 vi

M. S. A pinch four or five times daily.

—FERRIER.

Hay Fever.—To prevent its onset (*Medical Record*) wash the inner nares with one part of hydrogen peroxide and two parts of boiled water for three days before the usual date of onset, using a pint of the solution. In sensitive conditions use in an atomizer eight grains of boric acid to two ounces of a five per cent. solution of cocaine and give:

Fetid Breath.—*Medical Times and Hospital Gazette* recommends:

℞

Thymol	gr. viij.
Spt. vini rect.	f. ʒ i
Glycerini	f. ʒ ss
Formolini	gtt. viij
Aquæ	q. s. ad f. ʒ viij

M. S. Use as mouth wash, especially when fetor is due to decaying teeth.

℞

Ammonii iodidi	3 i
Ext. grindel. robust. fluid.	f. 3 iv
Ext. yerbæ santæ fluid.	f. 3 iv
Aquæ	to make f. ʒ iv

M. S. Teaspoonful four or five times daily.

ALEX. RIXA.

Follicular Tonsillitis.—(*Indian Medical Record*):

℞

Creosoti	mx.
Tinct. myrrhæ	
Glycerini	aa f. ʒ i
Aquæ	q. s. ad f. ʒ iv

Treatment of Epistaxis.—C. N. Cox (*Med. News*, April 20, 1901) recommends the following:

℞

Ext. capsul. suprarenal.	gr. xx
Glycerini	f. 3j
Aquæ	f. 3iij

Macerate for one-half hour. Filter and then boil the solution for a few minutes to sterilize it.

S. Apply locally.

SURGERY.

Dr. Carl Ludwig Schleich, of Berlin (quotes the *Pacific Med. Journal*), uses for his infiltration anesthesia cocaine and its salts, tropococaine and nirvanin. For general anesthesia he recommends the use of:

Ethyl chloridi	½to 2
Chloroformi	4
Etheris	12

Ointments for Ulcers of the Leg.—O. Schulze (*Muenchener medicinische Wochenschrift*, 1901, No. 12; *Wiener medicinische Blaetter*, April 11) gives the following formula: (quoted in *N. Y. Med. Journal*):

℞

Pulv. camphoræ	2
Zinci oxidi	15 to 20
Lard	q. s. ad 100

℞

Pulv. camphoræ	2
Solve in ol. oliv.	50
Add zinci oxidi	40 to 50

M. S. The dressing should be renewed twice or three times a day.

Treatment for Gonorrhea.—E. P. Dyer gives the following prescription in (*Jour. Medicine and Science*), and says that he uses it in all stages:

℞

Balsami copaibae	
Spt. etheris nitrosi	ää f. 3 iv
Spt. lavendulae cofp.	f. 3 iii
Tinct. opii	f. 3 i
Syr. simplicis	f. ʒ i
Mucilag. acaciae	q. s. ad f. ʒ vi

M. S. One teaspoonful in milk after each meal.

Treatment of Gonorrhea:

Plumbi acetatis	gr. xv
Zinci sulphatis	gr. xii
Ext. kramerise fluid	f. ʒ ii
Tinct. opii	f. ʒ ss
Aquæ	q. s. ad f. ʒ vi

M. S. Use as an injection twice daily.

Treatment of Gonorrhea:

℞

Plumbi acetatis	gr. xv
Zinci suphatis	gr. xij
Ext. krameriae fluid	f. 3 ii
Tinct. opii	f. ʒ ss
Aquæ	q. s. ad. f. ʒ vi

M. S. Use as an injection twice daily.

Treatment for Hemorrhoids.—The following has been successfully used by Pounne (*Journal des Praticiens*; *Revue medicale de Normandie*, April 25, 1901) in bleeding hemorrhoids.

℞

Chrysarobini	gr. 1-1/8
Iodoformi	gr. 3/100
Ext. belladonnæ	gr. 1/65
Ol. theobrom.	gr. xxx

Ft. suppos. No. I. S. Two or three to be used daily.

℞

Chrysarobini	gr. xxiiss
Iodoformi	gr. viiss
Extr. belladonnæ	gr. xv
Petrolati	gr. ccc

M. Ft. unguentum.

Salt Solution for Intravenous Injection:

A salt solution made according to the following formula is recommended by Carwardine in (*Operative and Pract. Surgery*):

℞

Sodii chloridi	3iiiss
Potassii chloridi	gr. xii
Sodii sulphatis	gr. c
Sodii carbonatis	gr. c
Sodii phosphatis	gr. viii
Aquæ destillat.	f. ʒ viii

M. S. Sterilize, and before using increase to two pints by adding water.

The "Normal Salt Solution."—There is some variation in the formulæ given by different writers. *New York Medical Journal* quotes Dr. Charles A. L. Reed, in his new *Textbook of Gynecology*, remarks that Locke has suggested the following formula and reported favorably upon it:

℞

Calcii chloridi.	gr. iii¾
Potassii chloridi	gr. is
Sodii chloridi	3 iis
Aquæ	q. s. ad Q ij

M. S. The solution may be injected subcutaneously, into the intestine, or into a vein.

DISEASES OF CHILDREN.

Vomiting of Pertusses.—Baginsky (*Jour.A. M. A.*)

℞

Menthol	gr. j
Sacchari	gr. xxi

M. Ft. chart. No. vi. S. Give one powder every two hours.

Administration of Oleum Morrhuae to Children.—Sheffield suggests the following as a palatable form of administering oleum morrhuæ to children: (*Journal A. M. A.*)

℞

Ol. morrhuæ	f. ʒ ii
Ext. malti	f. ʒ ss
Syr. calcii hypophos.	f. ʒ ss
Glycerini	f. 3 ii
Pul. acaciæ	3 ii
Aquæ cinnamimi	q. s. ad f. ʒ iv

M. S. One to two teaspoonfuls after each meal.

Vomiting in Children.—Holt (*Medical Record*).

℞

Potassii bicarb	gr. xxv.
Acidi citrici	gtt. xvii
Aquæ amygdalæ amarse	f. ʒ i
Aquæ destillat.	f. ʒ ii

M. S. One teaspoonful every time vomiting occurs.

Astringent in Diarrhea of Children.—In cases where astringents are indicated, he recommended the following:

℞

Bismuth subnitrat.	ʒ i
Mist. cretæ comp.	f. ʒ iii
Glycerini	f. ʒ iv
Mist. acaciæ	f. ʒ iss
Aquæ menth. pip.	q. s. ad f. ʒ ii

M. S. One teaspoonfuls every two hours until the diarrhea is checked.

Habitual Constipation.—(*Kemperer Med. Record*) Inject eight ounces of tepid water on retiring, and allow it to be retained until absorbed. Increase the quantity progressively each night while lowering the temperature of the water. If necessary, give an ordinary injection in the morning. Four to six weeks suffice to establish unaided defecation.

Palatable Effervescing Quinine may be prepared as follows, says the *Practitioner*:

℞

Quininæ sulphatis,	ʒ i
Acidi citrici,	ʒ iiss
Syrupi simplicis	
Syrupi aurantii cort.	aa f. ʒ xv
Aquæ destillat.	q. s. ad f. ʒ vi

M. S. Add 10 or more drops to about two ounces of water, in which gr. v. of bicarbonate of sodium has previously been dissolved, and drink while effervescing.

For Constipation in Children:

The following is claimed by the *Indian Medical Record* to be an effective remedy:—

Pulv. rhei	gr. xxiiss
Pulv. ipecac.	gr. iv
Sodii bicarb.	gr. lx.
Syr. simp.	f. ʒ iv

M. S. Teaspoonful every three hours.

To Absorb Pneumonia in Children.—(*Medical Record*) The following was successful in a child of eleven years, says Illoway.

℞

Tinct. verat. virid. (Norwood)	gtt. vi
Tinct. aconiti rad	gtt. ij
Aquæ destillat.	
Syr. tolutan.	āā ʒ ss

M. S. Teaspoonful every half hour for five doses, then a teaspoonful every hour.

Laxative for Children.—(*Jour. A. M. A.*)

℞

Magnesiæ (calcinat.)	
Sulphuris loti	āā ʒ iss
Melis despumati	q. s. ad ʒ iv

M. S. A tablespoonful to be taken in a cup of hot milk. The dose can be increased if necessary.

Enuresis.—Dr. J. J. Cassidy, of Toronto, (*Canadian Journal of Medicine and Surgery*) has obtained good results from the following prescriptions:

℞

Ferri citratis	gr. clx.
Syrupi calcii lactophosphatis	
Syrupi cascaræ aromatici	
Syrupi cascaræ aromatici	āā ʒ ij

M. S. A teaspoonful after dinner (noon).

℞

Ext. rhois glabræ fluidi	m. cccxx
Syrupi	q. s. ad ʒ iL

M. S. A teaspoonful at bedtime.

DERMATOLOGY.

Falling of Eyelashes.—(*Merck's Archives.*)

Acidit Gallici	gr. viii
Ol. ricini	*m*xxx
Ol. Lavender	gtt. iv
Petrolat.	ʒ v

M. S. Rub small quantity in eyelids night and morning.

Palmar Syphilides:—Ohmann-Dumesnil (*Merck's Archives*):

Acidi salicylic.	gr. xx
Ichthyol	gr. xxx
Ung. Aquæ Rosar.	ʒ j

Apply each night and wear gloves. After the lesions have been cured, apply the following to ward off recurrences:

Hydrarg. Chlon Mitis	gr. xv
Ung. Aquæ Rosar.	f. ʒ j

Tinea Circinata.—(*Jour. A. M. A.*)

Sulphuris precip	gr. xiv
Hydrarg. ammon	gr. xv
Thymol.	gr. iv
Unguenti simplicis	q. s. ad ʒ ii

M. S. Apply locally night and morning. This is applicable in ring worm occurring in children.

Treatment of Neuropathic Alopecia.—(*Jour. A. M. A.*) The following prescriptions are given by Brocq:

℞

Acidi acetici glacial.	m. xii
Tinct. cantharidis	f. ʒ i
Spt. rosmarini.	f. ʒ i
Tinct. tritici.	f. ʒ ii
Spt. camphoræ	f. ʒ ii

M. S. Apply locally.

Or,

℞

Aquæ ammoniæ	m. xxix
Tinct. pyrethri	
Tinct. jaborandi	āā f. ʒ i
Ol. terebenthinæ	f. ʒ i
Alcoholis	f. ʒ vi

M. S. Apply locally.

For Scabies.—J. V. Shoemaker recommends:

℞

Bethanaphthol	ʒ ss
Sulphuris sublimati	ʒ j
Ol. eucalypti	f. ʒ j
Unguenti zinci oxidi benzoati	ʒ j

M. Ft. unguent.

S. For external use.

Treatment of Eczema.—*Journal des Praticiens*, March 23, 1901) gives the following:

Naphthol camphoat.	gr. viiss
Zinci oxidi	gr. lxxv
Petrolati	ʒ xiiss

M. S. Use locally.

Treatment of Eczema.—Abraham gives in (*The Clinical Journal*) for the Exudation.

℞

Zinci oxidi	ʒi
Acidi boric.	ʒss
Pulv. amyli	ʒss

M. S. Use as a dusting powder.

To Remove the Hyperemia:

℞

Zinci oxidi	gr. xx
Hydrarg. subchloridi	gr. x
Plumbi acetat.	gr. x
Ung. hydrarg. nitratis	gr. xx
Vaselini	q. s. ad ʒ i

M. S. Apply locally after bathing the parts with a weak tar lotion.

Treatment for Comedones.—Fox, (in his *Atlas of the Diseases of the Skin*), recommends after the comedones are extracted the following lotions, taken from various authorities:

℞

Acidi tannici	gr. xx
Zinci oxidi	gr. xv
Magnesiae carbonatis	gr. xv
Aquae rosae	f. ʒi ad

M. S. To be applied with a sponge, soft cloth, or an atomizer.

(Elliott).

℞

Sulphuris sublimati	20
Alcoholis	20
Tincturæ lavandulæ compositæ	20
Glycerini	20
Aquæ camphoræ	20

(Piffard).

℞

Thymolis	gr. x
Acidi borici	3ii
Aquæ hamamelidis destillatæ	f. ʒ iv
Aquæ rosar.	f. ʒ i ad

M. S. Mop well over the surface once or twice daily.

(Shoemaker).

Treatment for Sunburn.—(From *Merck's Manual*, 1901):

Olei. Olivi	f. 3iii
Olei rosar.	gtt. v
Spt. Camphoræ	gtt. x
Lani	3 xii

M. S. Apply to burned surface.

MISCELLANEOUS.

Paralysis Agitans.—There is no specific treatment, and palliative measures are alone advocated, (says the *Medical Record*). Hydrocyamine acts upon the motor phenomena. The hydrochlorate or the amorphous salt (Grasset) may be used in granules of 1 mgm. each, gradually increasing the dose up to 4 or 5 mgm. and again gradually decreasing. Perhaps duboisine is more in favor than the former.

℞

Duboisin. sulphat.	0.01
Aquæ laurocerasi	20

M. S. A syringeful containing one-quarter of a milligram by subcutaneous injection.—Dujardin-Beaumetz.

Or,

℞

Solaninæ	0.01
Pulv. hyoscyami	0.02
Sodii bicarb.	0.20

M. S. To be taken in the twenty-four hours.—Sainton.

Or,

℞

Sparteinæ sulphat.	0.10
Syr. aurantii flor.	20
Aquæ destil.	100

To be taken in twenty-four hours.—Potts.

Borate of sodium is highly spoken of by some, in doses up to five or six grains daily. Collins suggests alternating duboisine or hyoscine with gelsemium or veratrum viride, gtt. x. of tincture three times daily.

Cathartic Treatment for Uremia.—(From *Merck's Manual*, 1901):

Elaterii	gr. 1/8
Sacchari lact.	gr. xv

M. Divid. in Chart No. v. S. One every day or every other day.

Treatment for Seasickness.—(From *Merck's Archives*, 1901.)

℞

Resorcin resubl.	3 i
Cocainæ hydrochlor.	gr. ii
Bismuth. subnitrat.	3ii

M. Divid. in Chart No. xxiv. S. Take one every one or two hours.

Treatment of Influenza.—L. Bourget (*British Medical Journal*, April 10, 1901) in the treatment of influenza, orders a liniment as follows:

℞

Acidi salicyl.	3 j
Methyl salicyl.	3 iiss
Ol. eucalypti	f. 3 i 1-3
Ol. calviæ	*mj*
Ol. myristic	3 i 1-3
Ol. camph.	f. ʒ j
Spt. juniper.	f. ʒ iv

M.

The patient is put to bed, and this liniment is rubbed into the chest (back and front). The bedclothes are then drawn closely up to the chin. In a short time salicylic acid will be found in the urine. He reports excellent results.

Organo Therapy.—A permanent solution of the suprarenal capsule (according to the *Opthalmic Record*), is made as follows:

Capsul. Suprarenal	gr. xx
Acid Phenic	gr. ii
Eucaine hydrochlorat. B	gr. v
Aquæ destil.	f. 3 ij

Macerate ten minutes and then filter.

Another permanent solution for the suprarenal capsule is as follows:

Capsul. suprarenal	3 i
Acid. Boric.	gr. xvi
Aquæ cinnamomi	f. 3 iv
Aquæ camphoræ	f. ʒ i
Aquæ destil. q. s. ad	f. ʒ ij

Macerate four hours and filter.

Book Notices.

A System of Physiologic Therapeutics.—A Practical Exposition of the Methods, other than Drug-Giving in the Treatment of the Sick. Edited by Solomon Solis Cohen, A. M., M. D., Professor of Medicine and Therapeutics in the Philadelphia Polyclinic; Lecturer on Clinical Medicine at Jefferson Medical College, etc. Volume II, Electrotherapy, by George W. Jacoby, M. D., Consulting Neurologist to the German Hospital, New York City, etc. In Two Books. Illustrated. Published by P. Blakiston's Son & Co., 1012 Walnut St., Philadelphia, Pa. Price, eleven volumes, $22.00 net.

The second volume of this system follows quite rapidly on the first. It is also devoted to the application of electricity to Medicine, including electrophysiology, electropathology, electrodiagnosis, electroprognosis, and finally, electrotherapeutics. One turns naturally to the last two parts for practical suggestions and finds complete directions for the application of Farradic and galvanic electricity to diagnosis, with the usual charts of the motor points so necessary in making an examination of the reaction. Under electrotherapeutics are included all the special applications of electricity, including that of the Röntgen rays in the treatment of lupus vulgaris which has commended itself to the clinician by some very positive results recently reported. Other surgical uses of electricity are considered in a section on this subject by Dr. J. Chalmers DaCosta, of Philadelphia, while electricity in Gynecology is treated by Dr. Franklin H. Martin, of Chicago, and Diseases of the Skin by Dr. A. H. Ohmann-Dumesnil, of St. Louis. It is greatly to the credit of the author that he endeavors to avoid any exaggerated estimate of the value of electricity, as illustrated by the statement that in its application to hysteric conditions its effects cannot be removed from the field of suggestion. [J. T.]

A Syllabus of New Remedies and Therapeutic Measures, with Chemistry, Physical Appearance and Therapeutic Application. By J. W. Wainwright, M. D. G. P. Engelhard & Co., Chicago. 1901. Price, $1.00.

In this work Dr. Wainwright describes the pharmacology of many of the new synthetic products, and gives some description of their preparation. The growth of drugs of this class has left the profession sadly in need of a work which shall furnish definite information concerning them, and we welcome Dr. Wainwright's book because it essays to fill this urgent want. As the author states in his preface he has not attempted to name completely all of the preparations which have been recommended, but only those whose place in our armentarium seems to have passed the experimental stage. The scope of the work prevents also anything more than a brief mention of each product, and this being the case in certain features portions are open to criticism. We might mention the description of chlorotone (*tertiary-trichlor-butyl-alcohol*), which has been sold for some years in Germany under the name of *aneson*, where it was first produced by Willgerodt in 1888, and scientifically investigated by Kossak and Rudolf, and, as Eichengrün states, it is shown to be dangerous as an internal remedy on account of the fact that it depresses blood pressure. This is also in accord with the conclusions of Dr. John J. Abel, but in opposition to the views of Houghton and Aldrich. It appears to us that Dr. Wainwright scarcely emphasizes sufficiently the untoward effects of this product. Describing piperazin (*diethylen-diamin*) he seems to be favorably impressed with its usefulness. It must not be forgotten, however, that the preparations of which piperazin is a type dissolve uric acid very readily in the test tube, yet in the economy the value of their action is much more doubtful and, as Cushny says: "Piperazin is excreted in the urine, and it was therefore hoped that it would dissolve uric acid gravel and even calculi. The amount of urine is too small, however, to have any effect upon calculi, and some authorities assert that the urine removes the solvent effect entirely." There is no doubt that piperazin affords relief in conditions of gravel, says

the same authority, and this may be partly explained by the fact that both this drug and urotropine often cause some diuresis. In Dr. Wainwright's book urotropin is mentioned favorably, but no mention is made of *formin*, *cystogen* or *aminiform*, which are generally regarded as identical with urotropin. For all of these products various claims made by their respective manufacturers, each seeming to hold that the others are quite useless. In the present chaotic state of the newer materia medica we welcome such a work as this of Dr. Wainwright, because it will help us to a fuller knowledge of these newer products. We hope that this edition may be but the first, and that as time goes on the author will keep this book thoroughly abreast of the scientific advances in this field. In addition to the description of the class of products named, the work contains an admirable chapter upon local and regional anesthesia and a very brief summary of serum-therapy. There is also a concise description of animal remedial preparations and we may express the hope that in the next addition (which we prophecy will be demanded) Dr. Wainwright will enter at length into the discussion of organo-therapy. [T. L. C.]

Physical Diagnosis in Obstetrics.—A Guide in Antepartum, Partum and Postpartum Examinations for the Use of Physicians and Undergraduates. By Edward A. Ayers, M. D., Professor of Obstetrics in the New York Polyclinic, etc. with illustrations. E. B. Treat & Co., New York. 1901. 283 pages.

In the present volume Dr. Ayers has endeavored to fill a long felt want in obstetric practice. To say that he has finally succeeded is but to poorly express the merits of the work. His Physical Diagnosis aims to "represent on paper, and with more careful expansion of statement than could be given in daily verbal instructions by the side of the patient, the clinical study of obstetrics." It is eminently a book of careful diagnosis and treatment, and having primarily appeared as a serial in "Obstetrics" it has already claimed a large hearing and won for itself a place in the obstetric library. Only the more important affections are discussed from the therapeutic standpoint, and especial stress is laid upon the prophylaxis of pathologic conditions. The book is replete with practical points that fail to appear in larger works, and from its features of conciseness and beautiful condensation it must appeal to the active obstetrician as the *vade mecum par excellence*. A comprehensive chapter in urinalysis is added to the other portion of obstetrical diagnosis. Numerous illustrations enrich the text and a complete index and tabulation render speedy reference possible. The author merits the congratulation of the profession on the handy book of reference he has produced. [W. A. N. D.]

A Text-Book of Gynecology. Edited by Charles A. L. Reed, A. M., M. D., President of the American Medical Association (1900-1901); Gynecologist and Clinical Lecturer on Surgical Diseases of Women at the Cincinnati Hospital, etc. Illustrated. New York: D. Appleton & Co. 1901. 900 pages. Cloth, $5.00.

The distinguished ex-president of the American Medical Association has ably sustained his reputation in the handsome work which he here represents to the medical profession. He states that in the preparation of the work three special objects had been kept in view, namely, the preparation of a text-book which may serve as a working manual for practitioners and students; the co-operation of the various departments of medical science in their synthetic relations to gynecology; and the specific recognition of the work of investigators and operators in gynecology and correlated departments. A close examination of the book from first to last shows that these aims have been realized, and a book compiled that will more closely fill the need than many that are now in the market. The therapeutic portions of the volume are especially rich. Under the heading of General Therapeutics of Gynecology are discussed the questions of general medication, serum therapy, local medication, balneotherapy, suggestion, electricity, and massage, while the sections devoted to the treatment of the special pathological conditions of the pelvis are full and comprehensive. The author rightly takes conservative ground with reference to organotherapy in gynecology. We agree with him that of all the animal extracts in actual use, the thyroid extract gives the greatest promise of satisfactory results, while even it is limited in its field of usefulness. Pelvic massage is given, we think, too prominent mention: it is a method of treatment that is unsafe in the hands of most men both from the moral and therapeutic standpoints. The treatment of shock is ably presented, and the section includes both prophylaxis and the more modern methods of transfusion of salt solution intravenously, subcutaneously, or per rectum. The subcutaneous method is, as the author states, the favorite method. Hemorrhage, respiratory and other accidents in anesthesia, and the accidents of abdominal section are all described in full, and the generally accepted methods of treatment delineated. We fail to find any of the newer therapeutic measures overlooked, and the combined efforts of the thirty-one contributors have resulted in a work that is eminently satisfactory and up-to-date in all of its numerous features. We heartily commend the book to the profession in general and to the abdominal surgeon in particular.—[W. A. N. D.]

Books Received.

The "Therapeutic Monthly" acknowledges the receipt of the following publications. Reviews of those bearing on this subject will appear shortly in the journal.

A System of Physiologic Therapeutics, edited by Solomon Solis Cohen, A. M., M. D., Volume II, Electrotherapy, by George W. Jacoby. Published by P. Blakiston's Son & Co., Philadelphia, 1901.

Some Recent Treatment of Sciatica.—Sicard, in his thesis, (December, 1900, Paris), first mentions the treatment of sciatica by lumbar puncture with the injection of 5 mg. of cocain. He reports that two severe cases which had long resisted all treatment were much benefitted by the injections. He used larger injections of normal salt solution ,later, also into the spinal cord, with less satisfactory results. Achard reported three cases of sciatica treated with intra-arachnoidal injections of 1 to 2 cg. of cocain with success, at the Paris Neurological Society, (March 7,1901). Marie and Guillain ((*Bulletins et Memoires de la Societe des Hopitaux de Paris*, 1901, No.12) reports in full a case of long standing sciatic neuralgia, in a man of 35, who had tried all sorts of treatment. They employed injections of 5 mg. of cocain at the most, believing that the smaller the dose, the less probable would be the appearance of the symptoms of intoxication, anesthesia, paresthesia, headache, etc. Three minutes after the lumbar injection the pain had disappeared, and he walked. For six hours he was free from all pain, then, when it returned, it was much less severe. Since the injection he has improved daily.

Bernard (*Bulletins et Memoires de la Societe des Hopitaux de Paris*, 1901, No. 9) reports his results in twenty cases of sciatica treated with injections of 5 c.c. of normal salt solution into the most painful points. In the majority of cases, recovery or great amelioration followed. Bernard also treated muscular rheumatism and lumbago successfully in the same way. He sometimes gave the injections as often as 3 or 4 times a day. In many cases two or three injections effected a cure. [M. O.]

The Therapeutics of Brewer's Yeast.—Yeast has for some time been used as a treatment for furunculosis, in doses of two or three dessertspoonfuls daily, with meals. It has also been employed in acne, ecthyma, and gastro-enteritis of children. In the (*Journal de Medicine de Bordeaux*, 1901, No. 21) Dr. P. Carles discuses its therapeutic action. Adrian has shown that, with a few drops of ether or chloroform, yeast will reamin fresh for about two months. Buchner has found that yeast contains zymase, a powerful ferment. This ferment in the yeast digests the circulation incompletely elaborated, cause overwork for the liver, make the blood a good culture medium for the growth of certain injurious micro-organisms, or become themselves the food of the microbes of furuncle, antrax, acne, and other dermatoses. [M. O.]

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The Dangers of Salicylic Acid.—Of the many who prescribe this very useful remedy in some of its numerous combinations, few realize that they are dealing with a drug which has any harmful effect beyond that of gastric derangement, which it sometimes occasions. It is, nevertheless, true that it is an irritant, which, though scarcely likely in therapeutic doses to cause inflammation in a normal kidney, may fan into an active and dangerous degree a nephritis previously latent. It is well known, also, that toxic doses produce albuminuria, and Sée reports a case in which the renal irritation was so severe as to cause hematuria.

In view of the fact that salicylic acid has been used to a considerable extent in the preparation of beer, a commission was appointed by the Academy of Medicine of Paris in 1885 to investigate its action. This Committee reported that the prolonged use of even very small amounts of salicylic acid is dangerous, and that in susceptible persons, especially the aged, it may cause disorders of digestion and renal disease.

It has happened to the writer, in at least one instance, to see a case of unsuspected nephritis so far aggravated by the free administration of the salicylates that the disease got beyond control and the patient perished. It is just as well, therefore, to test the urine before ordering this drug, and if albuminuria be present, to proceed very cautiously with dosage. Certainly, such free administration as is called for in every case of acute rheumatism should not be permitted if there be found associated nephritis, as often happens in gouty subjects.

As to the agent which is responsible for the irritation, it is probably the salicylic acid itself, since the drug is eliminated partly as such in the urine and partly as salicyluric acid.

The Use of Organic Extracts in Gynecology.—The interest that has attached to the use of the organic extracts in medicine has largely abated. In fact, with the exception of cretinism and myxedema there is hardly any medical condition in which the organic extracts can claim to have found a permanent foothold. Beginning with Brown-Séquardism, which was shortly followed by Hammond's series of organic extracts, the various theories and systems of organic medication have passed through a short, though at times animated existence, and have been ultimately swallowed up in medical oblivion. In surgery, however, there would seem to be a limited field of usefulness for these extracts. This is eminently true of the condition of sporadic cretinism following the operation of thyroidectomy. Here the removal of the thyroid gland is followed by a distressing series of symptoms that can at least be largely ameliorated by the judicious administration of the thyroid extract. In gynecologic surgery, also, there is undoubtedly a limited class of cases which may be materially benefited by the administration of certain of the organic extracts, notably the mammary, thyroid and ovarian, as has been definitely proved by the experimental researches of Bell, Mabbott, Shober, Dorland and others.

The general principle involved in the administration of the ovarian extract is founded on the belief that the ovaries in health constantly discharge into the fluids of the body a peculiar substance of unknown chemical composition, which possesses the peculiar property of favoring the oxidation of carbohydrates and fatty and phosphorized organic substances. When this peculiar ovarian substance is removed, either by disease or extirpation of the ovaries, or as a natural sequence of the postclimacteric atrophy of these organs, there results the well-known series of phenomena characteristic of the menopause. The restoration of this substance, either by the administration of a fresh extract of ovarian tissue, or by the surgical procedure of ovarian transplantation should, theoretically, result in the return of the woman to her normal anti-climacteric condition. Experimentally, this has in a limited number of instances, been proved to be true. Hence has arisen the interesting question of conservative surgery in gynecology. The administration of the ovarian extract has not, however, been so universally successful in its results as has ovarian transplantation.

Probably the most satisfactory results of organotherapy in gynecology have followed the use of the thyroid extract in the treatment of obesity, uterine subinvolution, fibroid tu-

mors of the uterus and deficient lactation. Owing to the property exhibited by this extract of inducing a rapid fatty metamorphosis and absorption of the body tissues, it has been recommended in the obesity associated with the menopause, and when used judiciously and in combination with dietetic and hygienic measures it has yielded in many instances most gratifying results. As a hemostatic and anodyne it is very frequently most beneficial in hemorrhagic fibroids, although no certainty can be attached to its action in these cases. In those instances in which operative measures are positively refused the administration of the thyroid extract would seem to be the proper medical palliative course. Beaston's method of treatment of otherwise inoperable cases of cancer of the uterus and mammary gland (namely, castration followed by the use of the thyroid extract) has seemingly yielded most astonishing results in a few cases, but the experience is so limited that positive conclusions dare not be made. It may become the proper course to pursue in neglected cases of cancer. The subject of organotherapy in gynecology is an intensely interesting one and open to further investigation.

We beg to call the attention of our readers to what we consider two very important papers upon pneumonia, printed in this issue. One, a lecture by Dr. P. K. Pel, of Amsterdam, on the treatment of pneumonia, in which the most important methods suggested are critically discussed, while the writer lays down what he considers the principles, and, to some extent the details, of a rational treatment. The second paper, by Dr. James C. Wilson and Dr. H. F. Page, of Philadelphia, is a report on the treatment of 17 additional cases of pneumonia by antipneumococcic serum. This makes 34 cases in all treated by this antitoxin under Dr. Wilson's direction. Dr. Wilson's large clinical experience and careful habit of observation make his conclusions particularly valuable.

Dr. Pel's paper was translated from the original in *von Volkmann's Sammlung Klinischer Vorträge*, and it has been necessary to edit the translation in order to eliminate certain idiomatic expressions and repetitions which are unusual in English written papers. A good deal that might be criticized may still remain, but we trust not more than will add by its picturesqueness to the interest which attaches to the enormous amount of information and practical suggestions contained in the lecture.

The Nasal Treatment of Dysmenorrhea.—Notwithstanding the fact that as far back as the 17th century, Boltolini and Hack pointed out that nasal treatment cured various diseases other than those of the nose; and even though Von Endriss and Fleiss, in the last decade, demonstrated, by experimentation, the strange and remarkably intimate relation between certain parts of the nose and the genital organs, still no practical use had been made of this knowledge till within the past few years. Schiff's further investigations in the Chrobak Clinic in Vienna, go to prove that there is an intimate relation, probably through the sympathetic nervous system, between certain so-called nasal genital spots on the anterior part of the lower turbinate bones, and on the tubercula septi, and the genital tract. Schiff made practical use of this fact by cocainizing these genital spots of the nose as a palliative treatment for dysmenorrhea. Out of 47 cases treated the pains were relieved in 72.4%. A permanent cure is effected by cauterization of the spots with trichloracetic acid or the galvano-cautery. Mental suggestion was carefully avoided, and general anesthesia considered to be out of the question. All forms of dysmenorrhea were treated, and only those in which some abnormal condition of the genital spots was present, were amenable to the nasal treatment. The nervous or hysterical form, and dysmenorrhea due to mechanical causes were not influenced. Some cases, in which there was a pathological condition of the reproductive organs, in addition to the nasal lesion, were improved or cured by treatment of the nose. It was also shown, experimentally, that, during menstruation or in the presence of chronic disease of the genital organs, irritation of the nasal spots caused pain in the lower abdominal and sacral regions. All of these facts lead us to believe that dysmenorrhea may be caused by lesions of these nasal spots, which seem to take part in the phenomenon of menstruation, and that this form of the disease may be cured by treatment applied to the aforementioned areas of the nose. The treatment must be carried out with care. The spots should be accurately found with the speculum, and touched with a few drops of a 20 per cent. solution of cocain. A 3-5 per cent. solution will suffice, if the spots have previously been made bloodless by suprarenal extract. The permanent cure consists in the cauterization of the spot, either during or between the menstrual period, with trichloracetic acid, or the electric cautery. The recent discussion of this new treatment of dysmenorrhea by the members of the "Gesellschaft der Aerzte" in Vienna elicited the fact that there was much to be said in its favor. Enough work has been done on the subject to show that the treatment would merit an "indicatio causalis," as well as an "indicatio symptomatica," so that it may be well to follow Chrobak's recommendation and try this form of therapy in all suitable cases.

Treatment of Tubercular Peritonitis.—This has assumed renewed interest because of changed opinions on the subject. For some time past it has been thought that surgical treatment was the only successful one, and even with this the mortality was very great. Recently there has been a revival of medicinal treatment. Thus in a recent article by I. Burney Yeo (*The Lancet*, March 16, 1901), he reports three cases of tubercular peritonitis cured by this treatment. Yeo states that at the present day about 50% of cases operated on recover, a result which is doubtless due to recent progress in abdominal surgery, but his object is to show the progress which has been made in the medical treatment. It has been considered until quite recently that tubercular peritonitis was secondary to tuberculosis elsewhere, but it has been shown by William Osler that it is primary in about 30% of cases. Its favorite place of entrance is by the intestinal tract, into which it is introduced in food, infected meats and milk. The bacillus may attack the intestine first and the peritoneum next, but being absorbed by the superficial lymphatics of the mucous membrane, it may attack primarily the serous membrane. Moreover, Debroklousky has demonstrated that the bacillus can pass through the walls of the intestine, and reach the peritoneum without a primary lesion of the intestine. Yeo holds that the medical treatment cannot be adopted too early, whereas the surgical may be. He claims it will be found that the medicinal treatment will be more efficient in acute cases, more often in the young, while for the old, chronic cases with adhesions very little can be done, even by surgical treatment.

The medical treatment consists first in relieving the pain and catarrhal irritation of the bowels and combatting, if possible, the tubercular infection. The following is recommended to diminish the frequency and offensiveness of the stools and also to relieve the pain: 15 grains of salicylate of bismuth, 15 minims of spirit of chloroform, half drachm of compound tincture of cardamom, with mucilage and water every six hours, together with a milk diet. A liniment should be applied to the abdomen, consisting of three parts of opium liniment (presumably Br. Pharmocopoea) and one part of tincture of iodine. To combat the tubercular process the application of iodine or iodoform to the surface of the abdomen, as well as internally, is highly recommended. An ointment composed of olive oil and iodoform, 20 grains of the latter to an ounce of the former, is rubbed in twice a day. In addition, a pill containing one-third grain of iodoform and half minim of creasote may be given three times a day. When this is given the bismuth, etc., must be discontinued.

Yeo says the treatment will be found quite successful if used in young people and in the early stage where there is always more or less ascitic fluid in the peritoneal cavity and where there is no matting together of the intestines, shrinking, or adhesion of the omentum and mesentery. Very little, if any, improvement can be expected in chronic cases of the dry, adhesive type and in old persons, and these are also the cases for which very little can be hoped for from surgical treatment. The iodoform inunction acts in the following manner: It is a well-known fact when iodide of potassium is given by the mouth that in a very short time it can be detected in the urine and saliva. This happens when it is rubbed on the abdomen, and in young persons it most likely enters the blood, and if regularly applied, in time is eliminated in the secretions, including those into the serous cavities. As these do not pass out of the body, the system will become surcharged with the iodine, acting as an antitoxin to the tubercle toxin, or as antibacterial to the bacilli.

In regard to operative treatment, Yeo says it should not be resorted to too soon, and it has been advised that at least four to six weeks in acute cases, and four to six months in the chronic, should be allowed to elapse before operation should be considered. The operation, when done, is very simple; in cases of effusion without adhesions, the abdomen should be opened in the median line below the umbilicus and the fluid allowed to run out. The wound should be stitched up without washing out the peritoneal cavity, unless the effusion is purulent; in which event the use of salt solution is advised, and before closing the cavity, the introduction of a little iodoform and glycerine emulsion. The medicinal treatment should be superadded to the surgical one as soon as possible.

Surgical authorities also differ somewhat in regard to operation, and draw sharp distinction between cases of tubercular peritonitis with ascites and the plastic form in which the peritoneal cavity is obliterated by adhesions. Some maintain that operative interference in the latter is useless, doing more harm than good. Prof. Watson Cheyne believes that even in the gravest forms some good can be done. The most favorable cases are those with localized ascites and the next those with diffused ascites. The next is the fibroid adhesive form when moderate in extent and unassociated with ascites. In cases where the abdomen contains large caseating masses the operation is not very successful. He does not consider early phthisis a hindrance, but does not advise operation in advanced disease. In cases of intestinal ulceration good results are very doubtful. As to the rationale of cure, Prof. Cheyne says that after the removal of fluid from the peritoneal cavity by incision, serum having antibacte-

rial properties may be exuded, and the morbid process thus arrested.

We have read these observations of Yeo with some surprise as well as interest, as our experience led us to conclude that medical treatment was at best unsatisfactory, while surgical treatment was most satisfactory, and the earlier the better.

Subcutaneous Injections of Vaseline.—Gersuny first employed this new therapeutic method at the Rudolfinerhaus in Vienna, in May, 1899, to replace testicles which had been removed for tuberculosis. Vaseline injections were made into both sides of the scrotum every two weeks. Later injections were made into the center of the hardened masses. (*Zeitschrift für Heilkunde*, 1900, Volume 1, No. 9). The technique of the proceeding is very simple. Moszkowicz describes it in the *Wiener Klinische Wochenschrift* (1901, No. 25). Gersuny employs *vaselinum albissimum medicinale*, refined white vaseline, *unguentum paraffini*, which has a melting point of from 36° to 40° C. This is boiled to sterilize it, and a hypodermic syringe, which is filled, is then allowed to cool. When it is cold, so that the vaseline is expressed as a white thread, one puncture is made. This will then remain unchanged, when injected into loose tissue; in tightly bound tissue. Schleich's infiltration anesthesia should be first employed, and but a small quantity of vaseline can be injected at a time. Moszkowicz explains that this causes some reaction at once, a local hyperemia which never goes on to inflammation. Connective tissue forms and the mass of vaseline becomes encapsulated by it. In time this becomes harder. Gersuny has performed over thirty operations by this method. Among cures, he includes incontinence of urine in a woman, by injecting vaseline into the urethral mucous membrane and the sphincter urethrae (*Centralblatt für Gynaekologie*, 1900, No. 48); he brought back good speech in patients who had lost parts of the palate, jaw, pharynx, etc., replacing the absent tissue with vaseline injections into the mucous membrane. He cured fistula in the mouth and abscesses in the rectum by closing them with vaseline; he cured hernia by occluding the inguinal canal with vaseline; he prevented vaginal prolapse by vaseline injections into the vaginal mucous membrane; and he corrected deformities in the nose, cheeks, eyes, bone, scars and wrinkles in the skin, and cicatricial retraction of the thorax. Besides, he has employed this method in maintaining movement in joints after ankylosis; and in keeping separated nerve-ends which had been severed to cure neuralgia. Moszkowicz shows that these small quantities of clean vaseline are never poisonous; nor does it seem possible for them to produce emboli. In one case, a patient who had typhoid fever, with a temperature of 40° C., the vaseline was felt to soften. But when the temperature again fell to normal, the increased consistence of the vaseline returned. Gersuny expects the indicatons for the use of this medication to multiply rapidly.

Original Articles.

A FURTHER REPORT ON SERUM THERAPY IN CROUPOUS PNEUMONIA.

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In June, 1900, one of us (Wilson) read before the Section on Medicine, at the meeting of the American Medical Association, at Atlantic City, N. J., a communication upon serum therapy in croupous pneumonia, based upon this method of treatment in 18 cases. The serum employed was that prepared in the laboratory of Mulford & Co., at that time under the charge of Dr. McFarland, and placed at our disposal for the purpose of clinical investigation. It was delivered fresh at such times and in such quantities as were required for the treatment of cases of croupous pneumonia in the German Hospital.

In that communication brief notes of the 18 cases treated were published. The serum treatment was not used in these cases to the exclusion of other treatment. On the contrary, individual patients were treated in accordance with the usual plan in the service of Dr. Wilson at the German Hospital, namely, by the systematic administration of Dover's powder, the application of ice-bags to the affected region of the chest early in the course of the attack, the use of calomel, strychnia, alcohol, inhalations of oxygen when necessary, and such other symptomatic treatment as seemed judicious in response to special indications.

The injections of serum were given in most instances directly after the patient's admission to the ward. In some few cases a delay of several hours arose in order that fresh serum might be obtained. The results of the cases that formed the basis of that report are as follows:

Two were women, 16 men. The youngest was 15 years of age, the oldest 48. The patients were all working people, most of whom had occupation up to the time of the attack. There were no tramps, coal-passers or sots among them.

Eleven were natives of the United States, one of Scotland, one of Wales, one of Holland, one of Jamaica, one of Ireland, and two of Italy.

One patient, Case 13, was a colored woman. The remainder were white.

In three instances there was a history of previous attacks of pneumonia.

One patient was admitted on the first day of the attack, three on the second, two on the third, three on the fourth, four on the fifth, four on the sixth, and in one instance the day of the attack was not ascertained.

The temperature upon admission varied from 101.2 to 105 F. The pulse frequency upon admission ranged from 90 to 128, and in 16 of the cases was 100 or higher.

Albuminuria was noted in 15 cases. In nine of these cases casts of various kinds, usually hyaline, were also present, and in one, Case 14, blood was present in the urine.

Blood examinations were made in 15 cases, usually upon the day following admission; in some instances later than this. In 13 of the cases there was very marked leukocytosis. In two the leukocytes numbered 8500. In one of these, Case 4, the defervescence was complete 27 hours after the first serum injection; in the other, Case 8, admitted on the fourth day of the attack, death took place on the seventh day. This patient, a woman aged 42 years, weighed over 200 pounds. The attack followed influenza.

There was a reduction of the red blood-corpuscles in all cases, usually moderate. The amount of hemoglobin was notably reduced in every instance, the least marked reduction being, in Case 16, to 76 per cent., and in Case 17, to 82 per cent.

In the cases in which the effect of the injections upon the blood was especially observed, a marked increase of the leukocytosis occurred. Thus in Case 1, before the serum was given, the white blood corpuscles numbered 23,200; after three injections they were 42,400 and remained at this point for three days, when the serum was omitted for 24 hours and the leukocytes dropped to 23,320. Upon resuming the serum the leukocytes again became 44,000. This patient recovered. Again, in Case 12, the blood upon the sixth day of the attack, before the administration of the serum, showed hemoglobin 45%, red blood-corpuscles 3,130,000, white 15,000. Three hours after the first injection the hemoglobin was 45%, red blood-corpuscles 3,190,000, white, 17,000.

Rusty sputum was present in 17 cases. In Case 12, admitted on the sixth day, the sputum was purulent.

The pneumococcus was reported to be present in the sputum of 15 cases. In Case 2, and in Case 6, no report was made, while in Case 12 it is distinctly stated that no pneumococci were found.

The summary of the dosage in this first series of 18 cases is interesting. In the earlier cases, it was given somewhat timidly, and at considerable intervals, the effect being closely watched. Later it was given freely and rapidly. In the first four cases the age of the serum, that is, the period that had elapsed from the time the serum was taken until its employment therapeutically, was not ascertained. In the subsequent cases it was known and recorded. The serum in all the cases was administered hypodermically. The total quantity varied from 20 cc., in Case 2, to 460 cc., in Case 5. Three cases received 400 cc., or more. The administration extended over a period varying from six hours, in Case 6, to eight days, in Case 1. The age of the serum, as above stated, varied from seven to 53 days. The immediate effects appeared to be more favorable and more marked in recently-drawn serum than in that which had been drawn for longer periods They consisted in general in slight lowering of the temperature and pulse frequency, mitigation of pain and tendency to drowsiness. Several of the patients expressed themselves as feeling better after the injection and seemed to be anxious for the time when it should be repeated. There were no effects observed that could be ascribed to the trikresol present in the serum.

Of the 18 cases, 4 died, a mortality of 22.2 per cent. In two of the fatal cases, 6 and 10, no improvement followed the administration of the serum. In Cases 8 and 16, it is noted that slight improvement followed the earlier administrations of the serum, but that the later injections were without effect.

The defervesence was usually by crisis or rapid lysis. The duration of the attack varied from five to 14 days, the majority of the cases coming to an end on the sixth, seventh or eighth day.

Of the four fatal cases, death occurred in two on the fourth day of the attack, in one on the fifth, and in one on the seventh. In three of these cases, 6, 10 and 16, the patients were alcoholic. In Case 8, no information concerning the previous habits of the patient could be obtained. In six of the cases that recovered there was a history of habitual excesses in alcohol.

The average duration of the stay in the hospital of 13 of the 14 cases that recovered, was 20½ days, one patient remaining in the ward at the time of the writing of the paper.

It is interesting to note that of 20 patients treated in my service in the men's medical ward at the Pennsylvania Hospital during the same period, on the same general plan, but without serum injections, four died, a mortality of 20 per cent. In this series, eight of the patients, including the four fatal cases, were intemperate. No conclusions as to the effect of a plan of treatment can, however, be drawn from a limited series of cases.

Between May 13, 1900, and June 1, 1901, the date at which the present report was prepared, 17 cases of croupous pneumonia have been treated in the ward service of the German Hospital and one case in the person of one of the resident physicians in a private room.

The following abstract of the ward notes of the 17 cases has been prepared by one of us (Page):

CASE I.—C. W., aet 34. Male. White. German. Admitted May 13, 1900. No history obtainable, as patient was delirious. Onset sudden, with chill. Admitted on 1st day of illness. Temperature 102.3°; pulse 120; respiration 50. Marked dyspnea and cyanosis, cough, rusty sputum. Lungs: Increased fremitus, dulness and tubular breathing, with marked friction rub over left base. Blood count day after admission: Hemoglobin, 76%; red blood corpuscles, 4,390,000; white, 15,000. Urine examination revealed pneumocci. Treatment: Ice bag, pulv. doveri, whiskey, strychnia, oxygen. Serum given every 3 hours, 20 c.c. 17 doses were given with no apparent effect upon temperature or respiration. Pulse slightly increased. Death on 5th day,

CASE 2.—A. C., aet 34. Male. White. Machinist. Admitted October 3, 1900. Family history negative. Two prior attacks of pneumonia. Uses alcohol and tobacco at times to excess. Onset sudden, with chill, pain in left chest, dyspnea. Admitted on 10th day of disease. Temperature 102.3°; pulse 90; respiration 36. Prostration marked, conjunctiva and skin jaundiced. Herpes on nose and lips. Lungs: Signs of consolidation over both bases. Rusty sputum. Blood count made 36 hours after admission: Hemoglobin 75%; red blood corpuscles 3,280,000: white 11,600. Urine contained albumin and bile stained leukocytes. Treatment: Serum in doses of 20 c.c. every 3 hours, in addition to regular treatment. 11 doses administered. Patient died 3 days after admission; 13th day of illness.

CASE 3.—D. F., aet 28. Male. White. Clerk. Admitted January 23, 1901. Family and previous history negative. Onset sudden, with slight chill, headache, cough and pain in left chest. Admitted on 5th day of illness. Temperature 102.3°; pulse 116; respiration 36. Lungs: Physical signs of consolidation over left lower lobe. Blood count 2 days after admission showed: Hemoglobin 73%; red

blood corpuscles, 4,160,000; white, 21,600. Urine contained albumin and casts. Treatment as usual, with 20 c.c. serum every 3 hours for 32 doses. Patient slept from 1 to 2 hours after injection. Temperature reached normal on 11th day of illness. During convalescence patient suffered with urticaria for about 10 days. Discharged, February 13th.

CASE 4.—W. R., aet 29. Male. White. Machinist. Admitted January 24, 1901. Family history negative. Uses alcohol and tobacco. Onset sudden, with chill, followed by fever, cough, pain in chest. Admitted on 6th day of illness, with a temperature of 103°; pulse 104; respiration 24. Lungs: Dulness, increased fremitus and tubular breathing over right lower lobe. Rusty sputum. Urine contained albumin. Treatment as usual. Serum given, 20 c.c. every 3 hours. 11 doses given. The day following admission, patient became delirious, necessitating the administration of morphia. Temperature reached normal on 8th day of illness, mental condition cleared. Discharged February 5th.

CASE 5.—J. F., aet 45. Male. Admitted January 25, 1901. Family history negative. Previous history negative with exception of 3 attacks of enteric fever (sic!). Onset sudden with chill, pain in chest and marked dyspnea. Admitted on 4th day, with a temperature of 100.3°; pulse 124; respiration 40. Cyanosed, lips covered with herpes. Lungs: Right base solid. Rusty sputum. Urine contained albumin; hyaline and granular casts. Treatment as usual, with serum, 20 c.c. every 3 hours, 14 doses being administered. Patient stated that he felt relieved after injection, became drowsy and restful. Temperature normal on 6th day. Discharged on 15th day.

CASE 6.—R. U., aet 22. Male. Colored. Laborer. Admitted January 31, 1901. Family history and previous history negative. Onset sudden with chill, cough and pain. Admitted on 7th day, with a temperature of 103°; pulse 128; respiration 36. Lungs: Right base solid. Sputum rusty, contained pneumococci. Urine contained albumin. In addition to regular treatment serum was given in doses of 20 c.c. every four hours. Temperature reached normal 6 days after admission, the 13th day of disease. Rapid convalescence. Discharged February 16th.

CASE 7.—E. S., aet. 20. Male. White. Book binder. Admitted January 31, 1901. Family history negative. Previous history: Subject to attacks of bronchitis. Uses alcohol at times to excess. Onset sudden, with chill and cough. Admitted on 5th day, with a temperature of 101.3°; pulse 104; respiration 36. Lungs: Dulness over entire right chest, increased fremitus over upper and middle lobes, absent at base. Tubular breathing and rales heard except at base, where breath sounds were inaudible. Diagnosis: Lobar pneumonia, with small pleural affection. Sputum rusty, containing pneumococci. Treatment as usual, with serum, 20 c.c. every 3 hours; 38 injections. Patient stated he felt more comfortable after administration of serum. Temperature reached normal on 15th day. Discharged February 27th.

CASE 8.—A. K., aet. 54. Male. Chemist. White. Admitted June 31, 1901. No history was obtainable, as patient was wildly delirious on admission. Admitted on 5th day, with temperature of 101.5°; pulse 120; respiration 48. Lungs: Entire right lung solid. Urine contained albumin and casts. Treatment consisted of pulv. doveri, brandy, oxygen, together with serum, 20 c.c. every 3 hours, 11 doses being given. Patient died 48 hours after admission, on 7th day of illness.

CASE 9.—L. M., aet 31. Male. Admitted February 1, 1901. No history obtainable, as patient was delirious on admission. Onset sudden. Admitted on 3d day, with a temperature of 105.5°; pulse 120; respiration 36. Marked cyanosis. Lungs: Base of right lung solid, with tubular breathing and crepitant rales Rusty sputum, containing pneumococci. Urine contained albumin, hyaline and granular casts. In addition to regular treatment, serum was started immediately, 32 doses being given. On the 8th day of disease temperature fell by crisis from 103° to normal, accompanied by profuse sweating. On the following day temperature rose to 104.3°; examination showed involvement of left base. Patient was widely delirious throughout his illness, and was known to be a hard drinker. Death occurred on the 14th day.

CASE 10.—W. R., aet 18. Male. Admitted February 2, 1901. Family history and previous history negative. Onset sudden, with chill and cough. Admitted on 5th day of acute attack with a temperature of 101°; pulse 92; respiration 30. Lungs: Physical signs of consolidation at left base. Sputum examination revealed presence of tubercle bacilli. Urine contained albumin and casts. In addition to regular treatment, 20 c.c. of serum were given every 3 hours for 4 doses. Discharged February 15th.

CASE 11.—E. R., aet. 47. Female. White. Admitted February 4, 1901. Family history negative. Previous history negative with exception of cough of several weeks standing. Onset sudden with chill, pain in chest. Admitted on 3d day, with a temperature of 102°; pulse 120; respiration 36. Lungs: Increased fremitus, dulness, bronchial breathing and fine crackling rales over right base. Sputum rusty. Blood count as follows: Hemoglobin, 70%; red blood corpuscles, 3,600,000; white, 8,000. Treatment as usual, with addition of 20 c.c. serum every 3 hours, 25 doses administered. Temperature fell by lysis, reaching normal on 14th day. Delayed resolution. Discharged March 21st.

CASE 12.—C. A., aet. 41. Male. White. Barber. Admitted February 12, 1901. Family history and previous history negative. Onset sudden. Admitted on 3d day of illness, with a temperature of 101.3°; pulse 104; respiration 30. Lungs: Physical signs of consolidation of both bases. Sputum rusty, containing pneumococci. On day following admission the temperature rose to 104°; pulse 128; respiration 48. Temperature ranged from 103° to 105° for a period of 5 days, during which time patient was delirious. Temperature fell by lysis, reaching normal on the 12th day. Blood count showed: Hemoglobin, 65%; red blood corpuscles, 3,600,000; white, 17,000. Sputum rusty and contained pneumococci. Urine contained albumin and casts. On the 14th day a profuse urticaria appeared on face, hands and abdomen; temperature rose to 103° and ran an irregular course with physical signs of delayed resolution. Temperature normal on 36th day of disease. 54 injections of serum, 20 c.c. each, were administered. Discharged March 3d.

CASE 13.—F. F., aet. 41. Female. School teacher. Admitted February 18, 1901. Family history negative. Previous history: Measles, mumps, pertussis, scarlet fever, diphtheria, rheumatism. During fall and winter contracted severe cold. Ten days prior to admission was ill with grippe; resumed work after 4 days. Onset sudden, with chill, headache, dyspnea. Admitted on 2d day of disease, with temperature of 104°; pulse 110; respiration 36. Lungs: Right base solid, with tubular breathing and fine crepitant rales. Fine rales heard over the left base. Urine contained albumin and casts. On the day after admission temperature rose to 105°, patient became delirious and death occurred 24 hours later, on the 5th day of illness. Treatment regular with the addition of 10 doses of serum.

CASE 14.—M. F., aet. 22. Male. Laborer. Admitted February 23, 1901. Family history: Mother died of phthisis. Previous history negative. Onset sudden, with severe chill, cough and pain in left chest. Admitted on 2d day of illness, with a temperature of 104°; pulse 120, respiration 36. Herpes on lips; profuse rusty sputum. Lungs: Increased fremitus, tubular breathing, with fine rales over left base. Blood count: Hemoglobin, 50%; red blood corpuscles, 3,100,000; white, 8,200. Urine contained albumin and casts. Temperature reached normal on the 10th day, but the day following rose to 103°, reaching normal 4 days later. On the 32d day right arm became swollen and edematous, with tenderness along the axillary vein. This condition continued for one week. Frequent examination of sputum failed to reveal tubercle bacilli. Pneumococci present. Discharged April 7th.

CASE 15.—W. R.,aet. 21. Male. White. Machinist. Admitted February 24, 1901 Family history and previous history negative. Onset sudden, with chill. Admitted on 7th day, with temperature of 105°; pulse 120; respiration 40. Herpes on lips. Rusty sputum. Lungs: Examination showed limited expansion of right chest, marked increased fremitus with dulness from apex to base, fine crepitant rales at apex, tubular breathing below angle of scapula. Gradual decline of temperature until the 14th day, when it again rose A physical examination at this period showed the upper lobe to be clear with flatness and loss of fremitus at base, On the 22nd day patient was aspirated and 2500 c.c. of pus withdrawn; five days later again aspirated: result, 1550 c.c. of pus. Patient was transferred to Surgical ward, but

left the hospital. 12 injections of serum were given in addition to other treatment.

CASE 16.—P. B., aet. 27, colored. Laborer. Admitted March 17, 1901. No history obtainable, as patient was too ill. Admitted on 7th day with a temperature of 101°; pulse 120; respiration 40. Profuse crop of herpes on lips. Lungs: Both bases solid. Rusty sputum containing pneumococci. On day after admission temperature rose to 105°, patient became delirious. Blood count: Hemoglobin, 6%; red bleed corpuscles, 3,600,000; white, 10,000. Urine contained albumin and casts; 14 doses of serum administered. Dulness on the 10th day of illness at right base; temperature normal on 20th day. Urine contained albumin and casts. 44 doses of serum were administered. During convalescence patient developed a large abscess of the thigh. Discharged at own request May 16th.

CASE 17.—E. W., aet. 32. Female. Admitted April 4, 1901 Family history negative. Previous history: Grippe 3 weeks prior to admission. Onset sudden, with chill; cough and pain in left chest. Admitted on 3rd day with a temperature of 100°; pulse 120; respiration 32. Lungs: increased fremitus; dulness and crepitant rales at left base. On the 6th day after admission patient was delivered of a 7-months child, which lived a few hours. Temperature reached normal on the 10th day; four days later rose to 103°, with signs of consolidation at right base. Temperature reached normal in four days. During convalescence patient developed a large abscess of thigh. Urine report showed albumin, but no casts. 44 doses of serum, 20 c.c. each, were administered. Patient discharged at own request May 16th, with abscess cavity still discharging.

An analysis of the foregoing cases shows the following facts:

Of the 17 cases, six died, a mortality of 35.3%.

Fourteen of the cases were males, three females.

The average age was 32, the youngest being 18, oldest 54.

Ten of the patients were natives of America, four of Germany, three of Ireland.

Two of the 17 were colored, one of these being among the deaths.

The average day of admission was 4.6.

In only one case (Case 2) was there a history of previous attacks.

Average temperature on admission, 102.3°.

The highest temperature on admission was 105.5°.

Average pulse rate on admission, 113; average respiration on admission, 37.

Albumin was found in the urine in every case.

Casts were found in 12 cases, 70.67%.

A blood examination was made in eight of the cases, from one to three days after admission.

In two cases (11 and 14) the leukocytes numbered 8,000: in the other six, the count ranged from 11,000 to 21,000. A moderate reduction in the number of red blood-corpuscles was noted in every case; likewise a reduction in hemoglobin.

Rusty sputum present in 13 cases, 76.5%.

Pneumococci reported in seven cases.

The serum was administered in doses of 20 c.c. every three or four hours; the total quantity given varied from 80 c.c., in Sase 10, to 1080 c.c., in Case 12.

The effect upon the temperature and respiration was not marked. In a few instances drowsiness followed the injections.

In two cases the treatment was abandoned on account of the pain and restlessness following its administration.

Defervesence occurred by crisis or by rapid lysis, the average day of normal temperature being the 10th.

Of the six fatal cases death occurred in two on the 5th day, one on the 7th, 10th, 13th and 14th respectively.

In four of these cases it was impossible to obtain any history on account of delirium, but two were known to be pronounced alcoholics.

The average duration of stay in the hospital of ten of the 11 recovered cases was 23 days.

One case was transferred to surgical ward for the treatment of an empyema.

The serum employed in these cases was, as in the previous series of cases, kindly furnished by Messrs. Mulford & Co. The routine treatment of cases of pneumonia was carried out in full in addition to the serum treatment.

While these observations were being carried out one of the resident physicians was seized in the morning with violent and prolonged chill, and upon examination some hours later signs of developing pneumonia were observed. He was subjected to the serum treatment which was carried out with full dosage during two or three succeeding days. Anomalous physical signs not distinctive of pneumonia developed, the patient became septic and was extremely ill for a period of several weeks with irregular temperature, cough, pleural pains and superficial abscess formation. Recovery took place after a tedious convalescence.

The result of the foregoing clinical studies has not been satisfactory, and it has been determined to abandon for the present the treatment of pneumonia by the antistreptococcus serum in the wards of the German Hospital.

Since the publication of Dr. Wilson's original report, Tyler, of Denver, has reported six cases treated at the Arapahoe County Hospital during the autumn of 1900.[1] Of these one died—a mortality of 16.6 per cent. His fatal case occurred in a patient suffering from acute alcoholism, who had been without treatment until the eighth day of the illness and who had but six doses of the serum.

Dr. Rosenthal has reported two cases of pneumonia following measles. Both cases were in babies about 12 and 14 months old.[2]

CASE 1 was a girl, who developed pneumonia on the 5th day of measles with a temperature of 105° F. In addition to other treatment this child received an injection of 20 c.c. of Mulford's antipneumococcus serum, 10 c.c. in the lumbar region on each side. Injections were made in the morning, at which time the temperature was 102.5° F. The temperature rose to 103° F. at eight o'clock in the evening, but had fallen the following evening. Forty-eight hours after the serum treatment was inaugurated the temperature, pulse and respiration were normal.

CASE 2 was a boy 14 months old. Temperature upon the 14th day after the beginning of the attack of measles was 106° F. Twenty c.c. of Mulford's pneumococcic serum were injected, together with 20 c.c. of Mulford's antistreptococcus serum. Other medication was pursued without regard to the serum. Aftr forty-eight hours these sera were repeated and again at the expiration of forty-eight hours. Both cases recovered.

This observer used the serum in other cases of pneumonia without success. The details of these cases are not given except that the treatment was instituted late in the course of the disease and made no impression at all.

1. Jour. Amer. Med. Ass'n XXXVI, June 1, p. 1540.
2 Journal of Scientific Medicine, January, 1900.
3. Medical News, December 1, 1900.

In a case of pneumonia which I saw with Dr. Rosenthal in a bar-keeper 44 years of age, accustomed to large amounts of alcohol, Mulford's antipneumococcus serum was administered in doses of 20 c.c. on two or three occasions without effect. This patient developed signs of meningitis and died upon the 11th day of the attack.

Dr. Rosenthal has published a further paper upon the subject without additional cases.[8]

Time has not permitted us to complete the examination of the literature upon the subject, but we believe the following table shows the clinical work in connection with this subject up to the present date.

AUTHOR	REFERENCE.	No. of Cases	Recovered	Died	Mortality	REMARKS
Lara	Lambert, Journ. Amer. Med. Ass'n, XXXIV, p. 900—902	10	10	0		
Bozzolo	" " " " " " " 900—902	5	4	1	20	
Lambert	" " " " " " " 900—902	12	9	3	25	Two who died were alcoholics.
De Renzi	Il Policlinico, Oct. 31, 1896	16	14	2	12.5	
Washbourn (& Pye-Smith)	British Med. Journ., Febr. 27, 1897; Dec. 25, 897	2	2	0		
Washbourn	" " " 27, 1897; " 25, 1897	6	6	0		
Spurrell	" " " April 17, 1897, p. 973	1	0	1	100	
Cooke, A.	" " " 1897, pp. 1278—79	2	2	0		
Hartnett	" " " May 22, 1897, pp. 1279—80	1	1	0		
Payne	Gaz. degli Osped. e delle Clin., Jan. 30, 1898	9	8	1	11.1	
De Renzi	Boston Med. and Surg. Journ., CXLIII, Oct. 4, 1900, pp 340—42	10	10	0		
Weisbecker	Muench, Med. Woch., Feb. 15, 1898, pp. 202, 238	21	19	2	9.5	One had emphysema; the other was 78 years old.
Fanoni	N. Y. Med. Journ., May 7, 1898, pp. 646—648	1	1	0		
Marsalongo and Franchini	Riforma Medica, No. 31, 1898	10	7	3	30	All 3 who died were alcoholics.
Fanoni	N. Y. Med. Journ., August 26, 1899, LXX, pp. 302—306	5	4	1	20	Death due to heart disease after convalescence.
Canby (Everhart & Frey)	Md. Med. Journ., March 1900, pp. 113—119	4	4	0		
Wilson, J. C.	Journ. Amer. Med. Ass'n, 1900, XXXV, pp. 595—600	18	14	4	22.2	
Kelly, A. O. J.	" " " 1900, XXXV, pp. 596—600	1	0	1	100	Hopeless before serum was begun.
McFarland (Rochester)	Boston Med. and Surg. Journ. 1900. CXLII, p. 689	1	1	0		
Tyler	Journ. Amer. Med. Ass'n. June 1, 1901. pp. 1540—45	6	5	1	16.6	Fatal case was a neglected alcoholic.
Rosenthal	Journ. of Scientific Medicine, Jan. 1900	2	2	0		
Rosenthal & Wilson (not previously reported)		1	0	1	100	
Wilson & Page	Present communication	18	12	6	33.3	
	Total	162	135	27	16.6	

The extreme variations that occur in the course of the attack and in the mortality of croupous pneumonia as modified by the age of the patient, his habits, previous health, antecedent diseases and complications, render general statistics wholly unreliable in determining the efficacy of any plan of treatment. Furthermore, in the greater number of the foregoing cases the serum treatment has not been employed alone, but in conjunction with expectant symptomatic methods. For these reasons conclusions based upon the mortality percentages are unreliable. Our observations in the service of the German Hospital, now based upon 36 cases, have not encouraged us to continue the treatment of croupous pneumonia by the use of the antistreptococcic serum.

The Treatment of Paralysis Agitans with Hyoscine Injections.—Hilbert (reprint from *Die Heilkunde*, 1901, Heft 3; quoted in the *Wiener klin. Woch.*, No. 20, Mai 16, 1901). Erb and Eulenburg have recommended injections of hydrobromate of hyoscine for the annoying symptoms of paralysis agitans. The effect of the remedy, according to the authors is that it decreases the tremor and quiets the patient, but on account of the marked toxicity great care must be taken in employing exact doses. The injections are also of value as permanent treatment, and for years the dose need not be increased. Only freshly prepared solutions should be employed.

A NOTE ON ACETON-CHLOROFORM (CHLORETONE) IN EPILEPSY.*

By WHARTON SINKLER, M. D.,

Physician to the Philadelphia Orthopedic Hospital and Infirmary for Nervous Diseases, etc.

In a disease like epilepsy, which resists all methods of treatment and in which cures are few, innumerable remedies are constantly suggested. After more or less general test they are found valueless and new remedies are sought. In epilepsy the only drugs which have endured for any length of time are the bromids. These are, after all, the sheet anchor in that disease. There are, however, many objections to their use, even in those cases in which the attacks are controlled by them, and in some forms of epilepsy—for example, petit mal—the bromids as a rule do not influence the frequency of the seizures. For this reason therapeutists are constantly seeking for combinations of other drugs with bromids to intensify their action or to counteract their pernicious influence. A few months ago I learned that chloretone had been administered with good results in some cases of epilepsy, and it seemed likely that the drug would be of value in this disease, for its chemical composition is much like that of chloral, which is often of marked advantage when given with the bromids. Many years ago Seguin suggested that by giving a few grains of chloral with a bromid, a very much smaller amount of the latter would be necessary to get the same effects of a much larger dose. Chloral, however, has it disadvantages, and it cannot be given in all cases without some risk.

I have used chloretone in several cases, not enough, however, to base final conclusions upon, but the results have been so good in some instances that I am led to present my experience with the hope

*Read by title at the meeting of the American Neurological Association, June 21, 1901.

that the preparation may be further tested. Dr. W. G. Spiller and Dr. W.D. Robinson have kindly given me some notes of cases in which they have also successfully employed chloretone in epilepsy.

Chloretone is an aceton-chloroform, or trichlor tertiary butyl alcohol. It is formed by the action of caustic potash upon equal weights of chloroform and aceton, and may be isolated from this mixture after the removal of any excess of aceton and chloroform by distillation. It is a white crystalline compound having a camphoraceous odor. It is partially soluble in cold water but very soluble in chloroform, aceton, strong alcohol or ether. This preparation was introduced several years ago by Dr. J. J. Abel, of the Johns Hopkins Medical School, for physiological purposes; and it was subsequently recommended as a hypnotic and local anesthetic. It is readily administered in capsules or tablets, and has been prescribed as a hypnotic in doses of ten to fifteen grains at bedtime. It is stated that as much as sixty grains have been given at one time, but I should be very unwilling to give as large a dase as this. The dose which I have used has usually been from three to five grains three times a day. In cases in which the attacks have been purely nocturnal, I have given five to ten grains at bedtime. In doses of five grains three times a day the patient seems to become drowsy and dull mentally.

The first case in which I gave chloretone for epilepsy has proved the most successful of any I have seen. It is as follows:

CASE I.—W. A. Male. Aged 17. Child of healthy parents, who were first cousins He has two brothers and three sisters younger than himself, who are in good health. As a child he had scrofulous abscesses of the neck and one sister had the same trouble. No history of epilepsy or other neurosis in the family. He was an active and intelligent boy, fond of outdoor sports, played football and was quite reckless in his playing. He had a fracture of the collar bone in November 1897, which was the only injury he ever received. In March, 1899, he began to run down and lose flesh. The only assignable reason for this was, that he had been playing football very hard and had been been studying for his school examinations. In June, 1899, he had a slight convulsion in the presence of his father. His studies and other work were immediately stopped, but the attacks continued, two or three occurring each day and from four to six each night. The attacks would come on suddenly; the eyes would be fixed and staring, the face flushed and his head turned from side to side. The duration was only a few seconds. In the noctural attacks the head would jerk from side to side; he then would be drawn in a sitting position and the feet moved up and down in rapid succession. The convulsions rarely awakened him from sleep, and he never seemed to be aware the next day of how many attacks he had had. The night attacks lasted about a half a minute. He consulted Dr. W. S. Thayer, of Baltimore, who kindly referred the patient to me. He was seen by me November 29, 1899. His appearance was that of good health; no evidence of kidney or gastric disease. An examination of the eyes by Dr. A. G. Thomson showed no refraction error, but a suspicious appearance of the right optic nerve, which looked somewhat like the beginning of neuritis. He was placed under careful observation and every attention given to diet and regimen. He was given sodium bromid, and subsequently a course of potassium iodid, pushed to sixty-five grains three times a day, together with a half-grain of bichlorid of mercury three times a day. Careful attention was given to the bowels and diet. In spite of this the attacks continued in frequency and varied from four to sixteen in the twenty-four hours. Most of the attacks occurred at night. He was in good general health, bright and intelligent, and capable of doing very good work as stenographer and typewriter. On February 15th he was ordered three grains of chloretone at bedtime, but no change was observed in the attacks. On February 28th he was ordered six grains of chloretone three times a day. On March 16th his father reported that he had had no attacks since March 3d, but that he was very languid, inert, mentally dull and disposed to sleep a great deal. The chloretone was therefore reduced to three grains a day. April 15th there had been no attack since March 3d, and the patient was bright and active. The chloretone was therefore reduced to three grains at bedtime, and this amount is continued to the present time. His father writes me on June 10 that his son has had no attacks since the third of March; his health seems good, and he does typewriting and stenography in the office and assists in the Post Office.

CASE II.—D. B. Female. Aged 17 years. Parents living; mother exceedingly nervous; father well. No epilepsy or insanity in the family. She was precocious and bright as a child, with an excellent memory, but began to have convulsions when teething. These continued until she was seven years of age. Since she was seven years old she has had attacks at greater or less intervals in which she felt nauseated, and would spit and seem unconscious. First there were five or six attacks each day; then an interval of several days without any. The seizure comes on quite suddenly; she feels, nauseated; repeats frequently "I am sick;" looks dazed and alarmed and then spits. She seems unconscious and afterwards confused. Occasionally her muscles relax and she drops things which she has had in her hands. She has taken bromids at irregular intervals most of her life, and her eyes have been corrected by two or three competent oculists. When seen on January 29, 1901, she was an anemic girl presenting various stigmata of degeneration and had strabismus. She was irritable and discontented. She had a harsh, mitral, systolic murmur. She is taking bromidia and bromids at the present time. She has three or four attacks each day. She was ordered chloretone, three grains three times a day and a laxative pill at night. On February 23d she reported three attacks since her last visit, the last being on February 17th, and she thought that she was better generally. On March 13th she had had one attack since her last visit, and said that she had not been so well for sometime. The chloretone was stopped and she was given a pill of ferro. ferri. cyanide, one grain three times a day. On March 31st she stated that she had been much worse since the chloretone had been stopped; she had had several attacks on this day, and there had been many since her last visit. The chloretone was resumed and she was given five grains in capsule twice a day. On April 20th she stated that the capsules excited her and made her very nervous. She had had three attacks in the last twenty-five days. She was ordered chloretone three grains three times a day. On May 16th the patient returned to her home, and her mother writes me that she has had no attack since her last visit to me, and she was advised to continue the chlorotone three times a day. There seems to be no drowsiness or mental dullness induced by the drug.

CASE III.—E. C. Female. Forty-five years of age. She first had an attack of epilepsy when twenty-three years old, in the third month of pregnancy. She had two or three attacks daily for six months. She was then free from attacks for eleven months; then grew worse until she began to have from three to six attacks each day. Most of the attacks are petit mal, but she has three or four severe attacks each month in which she is unconscious, bites her tongue and passes urine involuntarily. She was first seen by me May 29, 1899. She was given bromids alone, bromids combined with solanum carolinense and bromids and

digitalis; she was also given nitroglycerin. The greatest relief afforded was when she was taking fifteen grains of sodium bromid with two drachms of infusion of digitalis three times a day. After taking this for a month the attacks were reduced to from five to six a day to two or three a day, and often she skipped a day without any. On May 7, 1900, she was again having attacks more frequently, five or six a day. Acetanilide, three grains three times a day was prescribed on September 17th, and was continued for sometime with no influence upon the attacks. On February 11, 1901, she was ordered chloretone, three grains three times a day. On February 25th she reported one attack daily for ten days, but she was sleepy. March 11th she reported that she had had fewer attacks but did not feel well; she was drowsy and dull. On April 1st she was less drowsy and had had no attack for three weeks. This is the first time in thirteen years that such a long interval had occurred. Between April 23d and June 3d she had sixteen slight but no severe attacks.

CASE IV.—F. B. Female. Aged 24 years. She was first seen January 14,1901. Her attacks first began when she was eleven years of age with general convulsions and have continued to the present time to the number of eight or ten each month. She was ordered sodium bromid, ten grains three times a day. This was continued until April 15th. In two weeks preceding that date she had six attacks. She was then ordered chloretone, three grains three times a day, and had no attack until May 14th. She then had five attacks in the week previous and did not seem so well. She was sleepy most of the time, and the chloretone was therefore discontinued.

CASE V.—H. V. Male. First seen November 6, 1889. Aged 17 years. He had had severe convulsions since fifteen years of age, having two to six a week, and from one to five mild attacks a day. The longest interval without an attack has been six weeks. He was ordered sodium bromid, fifteen grains; infusion of digitalis, two drachms,three times a day. Following this he had from two to three mild attacks a day, and at times he would be several days without an attack. At one time he was free from an attack for one month. He had no attack from June 1st until August 6, 1900; then he had from five to six attacks monthly until February 11, 1901. He was ordered three grains of chloretone three times a day. In the week following he had seventeen slight attacks. He had headache; his face was flushed; he felt tired; his pulse was dicrotic and he was dizzy. The chloretone was therefore omitted and he was given sodium bromid again. The week following he had fifteen slight attacks.

CASE VI.—P. B. Female. Ten years of age. When she was five years old she began to have attacks which were a sort of general shaking. She did not fall or lose consciousness. In a short time, however, she began to have seizures in which she fell, face forward, and had general convulsive movements. For the first two or three years she never went a day without an attack, and sometimes she had four or five in two days. There is no aura. The attack is sometimes prolonged. She was seen January 27, 1901. She was a strong, healthy looking child with an intelligent expression; the functions all appeared normal. She was ordered chloretone, three grains three times a day. On February 26th she reported two severe attacks and an interval of six days without any. The chloretone was then omitted and sodium bromid, ten grains given three times a day. On March 16th the attacks were reported as of about the same degree of frequency. She was ordered chloretone, three grains three times a day. April 9th she had had about the same number of attacks. She has had four or five attacks in the past two weeks. The chloretone was discontinued as the child seemed drowsy, and she was ordered the bromids again. These were continued until May 28th but there was no diminution in the frequency of the attacks. She now screams hard with each attack, and has had as many as four severe attacks in a day.

CASE VII.—(Communicated by Dr. William G. Spiller.) F. P. Aged 36 years. Male. Seen at the Polyclinic Hospital in 1896. He said he had had convulsions for thirteen years. They occur both by day and night, and during the attack he bites his tongue. He was ordered thirty grains of bromid with two minims of Fowler's Solution three times a day. He was lost sight of until October 17, 1900. He then returned, saying that his attacks had been getting worse. He was ordered bromid of strontium, ten grains three times a day. On December 20, 1900, he was given chloretone, five grains at bedtime. He had one slight attack on January 6, 1901, and this was attributed by the patient to eating hot bread the night before. On January 13th he had a severe attack of convulsions, and the chloretone was increased to ten grains three times a day. He had no attack for six weeks while he was taking the chloretone, but when he stopped using the drug he had eight attacks within three weeks. He was put on bromid, twenty grains daily, which was too small a dose to control the attacks, but it was hoped that after the use of chloretone a small dose of bromid might be sufficient. On March 21st he was put on chloretone, ten grains twice a day, and had no convulsions while under this treatment until March 11th. He then complained that his face was swollen, and the chloretone was discontinued, and forty grains of bromid of strontium were given daily. He had no attacks for at least seven or eight weeks while taking the bromid.

CASE VIII.—A. W. Male. Aged 17 years. Parents are both healthy, but his father is a man of extremely nervous temperament and morbidly diffident; he is twenty-five years older than his wife. The patient is a tall, thin lad, and is markedly degenerate both in appearance and habit. He has a very decided talent for music and drawing, but is idle,self-willed and unreliable. For some years he has smoked cigarettes to excess, and he gets intoxicated whenever he can get liquor in any way. About two years ago he began to have attacks of petit mal, and the seizures have occurred to the number of three or four daily. He has only had three severe general convulsions. He was seen by me April 18, 1901, and was ordered chloretone, three grains three times a day, and very strict directions given as to his mode of life. A letter from the family physician dated May 8th, states that he has had but two attacks since I saw the patient; on both occasions, however, he had taken too much whiskey.

CASE IX.—Dr. W. T. Parry, Toronto, Canada, reports the following case. I. M. Female. Aged 15 years. Has had epilepsy for five years, having had as many as twelve to thirteen attacks in twenty-four hours. The attacks at first were limited to the muscles of one side of the face, but at times the whole body is convulsed, and the usual attack is confined to the side of the face, neck, shoulder and arm without any apparent loss of consciousness. The attacks occur frequently at night, and an attack almost invariably occurs on waking either at day or in the night, and the patient at times has attacks of grand mal. The usual drugs had been used without any influence, and chloretone was prescribed with the result of producing cessation of the attacks for ten days. The drug was then withdrawn and there was return of the attacks. At the time of the report, the patient had been under treatment for thirty days with no return of the seizures except during the two days when the chloretone was discontinued. The writer does not give the amount of chloretone prescribed.

CASE X.—(Communicated by Dr. W. D. Robinson.) T. C. White. Male. Aged 34 years. His first epileptic seizure occurred at fourteen years of age. The attacks were all severe and occurred from two to ten a week until he was twenty. He then began taking a combination of the four bromids in twenty grain doses, together with one-thirtieth of a grain of strychnia three times a day, and five grains of acetanilid at bedtime; also a compound cathartic pill twice a week. After the institution of this treatment he had no attack for five years. The dosage was gradually reduced but medication was constantly kept up. At the end of this time he had one severe attack after over-indulgence in eating. He had no further attacks for four years, and then, after eating a large meal of shad which had been kept for some days in cold storage, he had every symptom of ptomaine poisoning, and following this a renewal of the attacks in the same frequency and severity of ten years previous. In spite of all treatment; hygienic and medicinal in the way of intestinal antiseptics and bromids, he continued to have from two to ten attacks each month for over a year. The attacks were very severe and were followed always by much prostration; loss of flesh and mental strength occurred. Five months ago chloretone in three grain doses at bedtime was begun. The dose was gradually increased to nine grains. No other medicine was given. Three and a half months ago he had one slight attack but he has had none since. He has lost

eight pounds in weight since the beginning of the chloretone, but is much improved in every other way.

CASE XI.—(Communicated by Dr. W.D.Robinson). B. F. Female. Aged 44 years. The epileptic attacks began after heat exhaustion twenty-two years ago. She had three attacks a week for several years. Rest treatment, diet, with the administration of the four bromids and acetanilid reduced the attacks to one a month for the past ten years. Four months ago she began as the only medicine three grains of chloretone at bedtime, gradually increased to five grains. The patient had one light attack at the end of six weeks, and one very light attack in the day ten weeks later. The withdrawal of the bromids has gratified the patient very much.

Conclusions.—Chloretone is likely to prove a useful, and in suitable doses, a safe remedy in epilepsy. (It is only proper to state that in an editorial note in the last number of *The American Journal of Insanity* the profession is warned against the use of aceton-chloroform as a dangerous drug. The writer asserts that it is two-and-a-half times as toxic as chloral hydrate, and that great caution should be observed in its employment.)

It is apparently most efficient in cases of petit mal, and is on that account of value, for these cases are but little influenced by the bromids.

It exerts a decided action on the motor cells of the cortex, producing marked sedative action.

It need not be given in large doses to accomplish good results, and in those cases in which it has been administered, neither the mental nor physical condition of the patient has shown any evidences of impairment.

After a few weeks of administration, if the drug is suspended, the bromids then seem to exert more influence than when given prior to the employment of chloretone.

It remains to be seen for how long a time and in what doses the drug may be administered without producing ill effects.

THE TREATMENT OF CROUPOUS PNEUMONIA, CRITICALLY CONSIDERED.

By P. K. PEL,

of Amsterdam.

Gentlemen: The correct and exact estimation of our therapeutic ability constitutes the most difficult, the most delicate and the most complicated problem of clinical investigation. Spontaneous fluctuations and unexpected turns in the course of the disease which cannot be anticipated, local, epidemic and senile influences, the individual difference of patients, unreliable anamnetic statements, accidental co-incidents and whims of chance, render most difficult the correct estimation of our therapeutic successes at the sick-bed. At the same time one is always in the unpleasant position of being compelled to compare such unequal factors, whence it is evident that this will materially influence the actual value of statistical reports. Our wise ancestors were not wrong in saying: *"Non numerandae, sed ponderandae sunt observationes!"*

The therapeutic value of a remedy or of a curative method is generally determined by its apparent success, i. e., according to the number of recoveries and deaths observed during its use, and. furthermore, according to the influence exercised upon the course of the affection in its symptoms. The results of different methods of treatment are then further compared and thus the opinoni of the therapeutic value of a remedy is frequently determined. Such a method is evidently unreliable, for the termination of a disease actually depends upon many factors which are as yet imperfectly known to us, whence it may happen that a rational treatment may show unfavorable results and an irrational treatment may seem successful. How often, for instance, does it occur that thrombosis of veins is treated by massage, peritonitis by aperients, acute nephritis with the patient on his feet, and typhoid with improper diet, without the favorable termination of the disease being interfered with, even though curative measures are omitted? How easy, then, it is to commit a blunder! It is evident, therefore, it will be necessary, in order to be able to draw correct therapeutic conclusions, to have at one's disposal a very large number of cases with positively demonstrated diagnosis. With pneumonia, as in other diseases, no reliable conclusions can be drawn from a small number of cases

The full appreciation of what we are able to accomplish in this disease meets with further quite peculiar difficulties; in the first place, because nature, the *vis medicatrix naturae*, which we can hardly appreciate to its full value, effects a cure in three-quarters of the cases without medical interference, and in the second place, because the constitution, i. e., the individuality of the patient, which principally conditions the reactive and curative power of the affected organism, is in no disease so conspicuous in its operation as in fibrinous inflammation of the lungs. It will scarcely be necessary for me to mention the importance of age in this disease, and for this reason I do not consider it wise to compare the results of treatment of pneumonia in military garrisons with their strong, youthful and physically well-built soldiers with results from hospitals and clinics frequented by debilitated and very sick patients of different ages. It is absolutely necessary to take into account the class of patients if one intends to draw only moderately reliable conclusions as to one or other mode of treatment. Without particulars or without exact controlling observations the statistics of hospitals or infirmaries are of no use whatever.

Probably everybody has experienced that at certain times nearly all acute infectious diseases terminate in recovery, whence we may infer favorably as to the efficiency of treatment. But at other times the course of the same disease is far more unfavorable and the belief in our therapeutic ability is greatly shaken. In fact, the disease at times does not heed at all the weapons with which medical science is trying to combat it. In this relation the well-known view of the great English clinician Thomas Sydenham is always of interest. He scarcely deigned to honor scarlatina with the name of a disease, and yet the native country of this famous investigator was later on visited by this disease in its severest form.

Something similar occurs in pneumonia, although not in so pronounced a degree. Sometimes the dis-

*Translated from a lecture published in Volkmann's Sammlung Klinischer Vortraege, Nr. 284, November, 1900.

case takes a very mild course for quite a period, at other times it will happen that one after the other is carried off. The latter is especially the case if the inflammation of the lungs appears more or less frequently or during an epidemic of influenza. Our intelligent predecessors, therefore, were quite right in speaking of a benign or malignant character of an epidemic or of a *genus epidemicus*. Undoubtedly it depends partly upon the kind and virulence of the disease-generator and possibly upon the co-operation of several of them, partly also upon the individual susceptibility which is subject to great fluctuations. In considering all these facts it becomes quite evident that in former times these great variations were rightly ascribed to atmospheric influences which undoubtedly play a certain rôle. Consequently arises a third necessary postulate that experiences and observation should cover longer periods, if the value of our therapeutic influence is to be judged correctly.

According to what has been published in medical literature the above apparently simple principles have not always been sufficiently considered. It appears to me absolutely necessary to subject our attempts to cure and the explanation of our therapeutical experience to a more severe criticism and a more rigorous logic than is often the case. In fact, with the quite comprehensible inclination of the physician to do his best in the interest of the patient and with the necessity of active interference to satisfy the wishes of friends, it is not easy to gain an exact insight into the natural course of the disease. Truly, it requires a certain amount of courage and a deep-rooted conviction on the part of the physician, at the bedside of his very sick patient to quietly await the inherent healing power of the organism and to initiate a treatment only when demanded by actual danger to life. One feels the truth and the importance of Dietl's* words, when he says of himself: "But I was lacking the courage to quietly await the natural course of the disease; with the increasing dyspnea and anxiety of the patient my own grew to such an extent that I resorted to the lancet"—which in later times, as is well known, was almost entirely discarded by him.

I canot here enumerate all the modes of treatment applied or proposed for fibrinous pneumonia, or name all the remedies in chronological order. It is rather my duty to explain here what should be done and what should be omitted at the sick-bed.

Let us briefly consider the natural course in typical pneumonia. The classic picture of the disease in a strong, healthy man is much as follows: Apparently in the best of health, he is seized by severe chills, headache and pains in the limbs, by a feeling of heat, sometimes by vomiting and other cerebral symptoms. The pulse increases in frequency, the temperature rises rapidly, the respirations become rapid and short, a cough, at first dry, is invariably present, aggravating the cephalalgia; while the discomfort of the patient is further increased by stitches in the side, by pain aggravated by pressure, breathing and coughing. Soon the rusty sputum appears, so valuable for the physician in the daignosis, a sputum expectorated with great difficulty. This expectoration is the visible expression of the processes which take place within the pulmonary tissue. Often the distinctive herpes makes its appearance on the lips or on the alae nasi of the patient. The skin is hot and dry. The face is congested, sometimes slightly cyanotic. The cheeks are red and dry, though sometimes one is moist. Sleep is disturbed, and there is often delirium alternating with groaning consciousness indicating great misery and discomfort. The upper part of his body is slightly raised and dyspnea becomes more severe, as shown by the increased breathing rate. By these signs the experienced physician will at once single out the pneumonic from other patients. The urine exhibits a characteristic "fever red" color.

The condition becomes more serious every day, until at last spontaneously, most frequently at the end of the first or at the beginning of the second week, and just when the difficulty is greatest, to the surprise of the patient, the long-wished-for sleep sets in—sleep which could not be enforced by any hypnotic, while the fever, previously uncontrollable by any remedy, rapidly subsides. The rate of the pulse decreases, the cough becomes more bearable, the dyspnea and anxiety grow less, and a copious discharge of urine appears with considerable sediment. This though no change is as yet discoverable in the physical condition of the lung. The patient now rests comfortably in bed, although still weak and exhausted, and unless complications supervene, becomes rapidly convalescent. What has happened to him? What has made him sick? What has cured him? Nature? Medical science? The physician?

The pneumotoxins, generated by pneumococci, have reached the blood current via the lymphatic vessels and capillaries. The originally local affection has soon become general. The injurious chemical bacteria-products which are admixed with the blood, next affected the vaso-motor and heat-regulating centers, sometimes, also, the vomiting and other cerebral centers, further the condition of the blood, the nutrition of the body and its metabolism. They produce the initial chills, the fever, the prostration, the consumption of the bodily strength; they endanger life by injury to the most important vital centers in the medulla oblongata.

They are joined by local inflammatory disturbances of the inflamed organ, by pains in the chest, cough and expectoration. But the local pulmonary changes, the infiltration of the tissue with inflammatory products are not wholly in themselves responsible for those discomforts and dangers to the patient, although they contribute much. Thus it is possible that the pain may increase the dyspnea.

It may happen that the bacteria themselves causing the disease, at least in the graver cases, enter the blood current; but probably they are mostly made innoxious in that fluid through its cardinal anti-bacterial qualities and substances. Should they not be thus destroyed, the pneumonic will also be threatened by complications (meningitis, endocarditis, otitis, arthritis), but only when certain other conditions are fulfilled, as when the respective organs have lost their power of resistance—if they became *loci minoris resistentiae*. What has happened to cause the

*Bleeding in pneumonia. By Joseph Dietl, M. D, Vienna, 1843.

turn for the better so suddenly, in a manner so critical?

Modern bacteriological exploration has also enlightened the darkness of these complicated conditions of spontaneous cure, although we are still far from a thorough interpretation and explanation of the extremely intricate processes of healing which take place within the diseased organism. A sage nature, founded so very judiciously, has created, besides toxins, their antitoxins also. Marvellously, as everywhere in morbid processes, are here, too, the compensatory powers of nature to equalize pathological conditions.

Tempting, as it may appear, it is not appropriate here to explicitly discuss these complicated processes. It is the practical aspect of the question which must occupy us first. I only call attention to the fact that the organism is enabled to offer resistance by preformed elements on the one hand, and on the other by elements formed anew in consequence of the irritation of micro-organisms and toxins. It will not be necessary for me here to detail the important rôle of leukocytes and fibrin in this relation. This can be easily deduced from the frequently occurring hyperleukocytosis and hyperfibrinous state of the blood. Thus the fate of the pneumonic patient will not be decided in the lungs, but in the first place in the juices of the body.

Furthermore, the affected organism has its natural secretory functions by means of which it tries to eliminate substances injurious to the body. The practical physician should not underrate these natural means of elimination, because they may give him a hint to occasionally supervise the secretion of certain glands, and, if necessary, to stimulate their function.

Consequently, a pneumonic patient, even without medical aid, is not powerless when subject to the dangerous generators of disease. The preventives are many by means of which the organism strives to accomplish spontaneous purification, a disintoxication of the blood and of the juices of the body. It is difficult to understand why this disintoxication occurs sometimes acutely, sometimes by lysis and at other times not at all. But it appears likely that the intensity of the antitoxin-formation, as well as the degree of leukocytosis, are here also of determining importance. Finally, here, as so often, quantitative conditions enter. According to the well-known investigations of G. and F. Klemperer,* in most of the infectious diseases (diphtheria, plague, cholera), the generators of diseases are not killed after the crisis—in fact, it seems that they have not even lost the ability to produce toxins. The injurious elements become apparently paralyzed by the immunity which has taken place. If the course of the disease were always so favorable and regular as just described, the aid of medicines would not be needed. The question then would be simply how to shorten the pathological process, to make it abortive.

Unfortunately, in quite a number of croupous pneumonias the crisis, so ardently wished for, fails to appear, and the disease takes a grave course, greatly threatening life by disturbances of the cardiac, pulmonary or cerebral functions. These are the unwelcome inflammations of the lungs, taking an atypical course, differing in many ways from the typical, classical cases. This less favorable and irregular course of the affection is in quite a conspicuous manner influenced by the constitution of the patient, a fact thoroughly appreciated by our ancestors, but lately too much ignored. It refers to the resistance of the diseased organism, in the first place the intensity of the salutory reaction after infection has taken place, which affords the organism the strength required for the purification of the blood charged with toxic elements.

Who does not know from personal experience, how great is the danger to life of people suffering from emphysema, bronchitis, Bright's disease, diabetes and heart disease, of obese individuals, if attacked with pneumonia; if it happens to the aged, to the nervous and overexcited, to the decrepit profligate and alcoholic; and how peculiar, atypical and severe the picture and course of disease are frequently shaped in such cases. Sometimes the general symptoms of the infection, at other times disturbances of the functions of the lungs, but more frequently deranged cardiac and cerebral function are the most prominent manifestations. Frequently the local affection of the pulmonary tissue falls into the background, or, on the contrary, it spreads widely. Very often one may observe those forms of pulmonary inflammation which have been so clearly described as asthenic by Leichtenstern,* and as toxemic by Finkler.**

Of course, an abnormal course of the affection may depend upon the kind, virulence and condition of the causes of the disease or upon a mixed infection. Usually this question cannot be decided by the clinician at the bedside.

To what extent will it be possible to increase the chances for a favorable termination by proper therapy, to interfere with the pathological processes, to lessen the dangers to life and to alleviate the suffering of the patient? It would be ideal to exterminate the pneumococci which have colonized in the pulmonary tissue, or at least to render them ineffective by parasiticides—antiseptics, or, to render the body immune against their injurious products. This would be true etiological, specific treatment. But, as a rule, ideals cannot be realized, and here, as elsewhere, there is as yet no specific remedy producing such effects. In spite of the good results, I prefer to caution against the large doses of salicylate of sodium, 8 grms. (120 grains) per day, recommended by Lieger* and Schlönischer.** They certainly lower the temperature and cause abundant perspiration, but otherwise they do more harm than good, because these toxic doses may seriously weaken the natural resistance of the organism without attacking the enemy itself.

Pilocarpin, which was recommended by Hunga-

*Experiments of immunization and cure in pneumococcic infection. erliner Klinische Wochenschrift, 1891.

*On Asthenic Pneumonias. A collection of clinical lectures. Innere Medicin, No. 82, 1874.

**Acute inflammations of the lungs as infectious diseases, 1891.

*Communications of the Physicians Union in Styria, No 4, 1893. Wien. Med. Wochenschrift, 1899, No. 28.

**My therapy in croupous pneumonia. Wien. Med. Wochenschrift, 1898, No. 19.

rian physicians (Sziklac[1]) is just as little proven to be a specific against pneumonia, according to the careful investigations of Rosenberger,[2] in Purjesz' clinic, and of Glass,[3] in Pal's wards. It appears doubtful to me whether the requirements upon which I have laid stress in the valuation of a curative method have been sufficiently taken into consideration in the recommendation of the last-named remedies.

Koranyi's dictum of 1887—there is no direct remedy against pneumonia—still holds good to-day. What the future may bring us, no one will venture to predict. A thoughtful research after specifics appears to me quite justified.

Animal experiments seem to advocate the treatment of pneumonia with so-called curative serum, i. e., the serum of animals immunized from pneumococci or of cured pneumonics, and experiences in the treatment of individuals ill with pneumonia stimulate further researches. We gladly and gratefully accept the fruits of the auxiliary sciences and listen with ears wide open to the results of animal experiments; but experience at the bedside is alone able to decide as to the actual value of this mode of treatment. The injunction seems to be still applicable that it is quite unjustified to apply without question the results of animal experiments and results obtained *in vitro* to the so much more intricate human pathology. The well-known investigators Klemperer[1] report favorable results of their pneumonic serum, but like true natural philosophers who are rightly of the opinion that only very extensive experience will permit a reliable decision, they refrain from passing a definite opinion, although they were able to demonstrate a temporary defervescence with slowing of the pulse and of the respiratory frequency in all cases treated, about six to 12 hours after the serum injection. In two cases the temperature even remained permanently normal.

The experience of several Italian investigators* (Pane, de Renzi, Foa, Scaria, Janson, Maragliano) is likewise favorable according to communications at the Italian Congress of Internal Medicine of 1897, although their explanations and results did not remain uncontested. (Baduct,** Belfanti.) Besides the number of cases observed by some was entirely too small. As far as I know, further and sufficient experience is still lacking, although the first reports date back about eight years. This appears to me to be a little suspicious. But it is quite possible that a good harvest may yet be reaped in this direction. Aimful bacteriological researches have already accomplished many and remarkable results. Let us hope that the bacteriologists may at some time present us with a serum which is a worthy peer of that of Behring, by means of which we may be enabled more frequently than at present to preserve the life of our pneumonia cases. As the matter stands to-day, up to the present hour we cannot possibly consider the serum treatment of pneumonia an actual gain in medical practice, because decisive knowledge is still wanting. The real value of this mode of treatment is still hidden.

It has also been tried to favorably influence the course of pneumonia by medicinal treatment, partly with a view to neutralizing the toxins which were circulating in the organism. I mention here quinine as the main representative. Being in use for a long time as a tonic in small doses and applied and praised by many clinicians as an antipyretic in larger doses, the well-known clinicians of the Hotel Dieu, viz.: Germain Sée, as well as Lépine, and furthermore, Finkler,* of Bonn, have likewise ardently advocated the application of quinine in pneumonia. But it is mainly Aufrecht,** the noted writer on pneumonia in the important collection of Nothnagel, who most strongly endorses quinine. On account of its taste, he uses it in the shape of chininum tannicum neutrale; also, by reason of a recommendation of the experienced Niemeyer, in connection with equal parts of ferrum oxydulatum saccharatum. e gives one gram three times a day.

He praises quinine, which in graver cases he applies subcutaneously at the same time (one to two times daily half gram, chinicum hydrochloricum, dissolved in water), not so much as an antipyretic, but as an almost specific remedy for the toxins circulating in the organism. He especially extols its very favorable influence upon the general course of the disease. This experienced observer says: ::I have, after a single subcutaneous application of quinine, repeatedly noticed so remarkable an improvement of the patient, that I can but urgently advise this thoroughly harmless procedure. The improvement referred less to the temperature, but to the general state of health, and it created the impression, as though the subcutaneously applied quinine weakened the injurious effect of the bacterial products." He thought he could best illustrate the advantage of this mode of treatment by reproducing the statistical tables of the mortality of pneumonics during the last ten years. These show that, during the last two years of the quinine treatment, the mortality has decreased to 6.6 and 8.2 per cent., although in former years it fluctuated between 9.8 and 25.3 per cent., and even grew to 24.9 per cent. during the year which preceded the quinine therapy.

In perusing the explanations of Aufrecht, the thought suggests itself that he, who does not apply the quinine therapy to his pneumonic patients, renders himself guilty of a sin of omission. At least this occurred to me, but fortunately this self-accusation lasted but a short time.

Of course, it is a delicate and disagreeable task to have to pass opinion upon the view of an experienced clinician which is founded upon observation, especially if one has no experience of his own to offer; therefore, I do not venture to doubt or even to contest the importance of the results gained. But in spite of this, it seems to me that Aufrecht's explanations are not indisputable and cannot be up-

1. Wiener Med. Presse, 1894, No. 4 cited from Aufrecht l. c., Wiener Medicinische Wochenschrift, 1896.

2. Clinical observations of the effects of Pilocarpin muriate in Croupous Pneumonia. Deutsch. Arch. fuer Klin. Med., Vol. LIX. No. 5 and 6, 1899.

3. Pilocarpin Treatment in Croupous Pneumonia. Centralbl. fuer Therapie. 1894.

1. Clinical report of 20 cases of specifically treated Pneumonia. Proceedings of the XI. Congress for internal medicine. Leipzig, 1892.

*Italian Congress for Internal Medicine. Ther. Wochenschrift, 1895.

**On Pane's pneumonia serum. Ital. Congress for Internal Medicine, Turin. Muench. Med. Wochenschr., 1897.

*Acute inflammations of the lungs as infectious diseases. Wiesbaden, 1891.

**Inflammations of the lungs. Spec. Path. and Therapy, published by Professor Nothnagel. Volume XIV, 1897.

held against a rigid criticism. In the first place, I offer a critical objection. The treatment with quinine was introduced, supported by the opinions and experiments of Binz and Finkler, who believe that quinine not only acts as a symptomatic antipyretic, but also has an immediately favorable effect upon all those pathological processes which are accompaniel by suppuration, increase and emigration of white blood corpuscles. Now the analogous conclusion is drawn that quinine, therefore, should also have a favorable effect upon other similar affections, for instance, upon pneumonia. Furthermore, Aufrecht relies upon the fact, based on experience, that a favorable effect of quinine cannot be denied upon all inflammatory affections which lead to anemia.

Against these deductions I would like to modestly raise the objection that, if ever, here most of all, a generalization of single experiences is not permissible. If quinine acts salutarily and even as a prophylactic in malarial infections, and also—provided the fact is well founded—proves to be beneficial in certain febrile anemic conditions, this does not at all prove a favorable influence upon the pneumonic process, even if some points of similarity may exist in the respective affections. Therefore, it is necessary to prove the therapeutical success for each disease individually. Furthermore, according to recent opinions of the salutary significance of the leukocytes, quinine does not seem to produce a decrease of leukocytosis or restrict the emigration of the white blood corpuscles. But these are only theoretical objections.

The following one is weightier, because it seems questionable to me whether the statistal reports indicate a direct causal connection between the quinine treatment and the decreased mortality. In the first place, because, in 1880, the mortality was almost equally favorable—9.8 per cent.—in spite of absolutely expectant therapy, and secondly, Aufrecht himself emphasizes the great variations of the severity and dangerousness, and, consequently, of the mortality in pneumonia. In Vienna, in spite of fully uniform expectant treatment, the mortality fluctuated between 7 and 20 per cent. Similar fluctuations are presented by my own cases, while the proportion of mortality is the same of the patients treated by Aufrecht. Differences of 12 and 13 per cent. in following years are no rarity. The language of figures is only then comprehensible and convincing when these figures are large, in fact, very large.

In view of these facts based on knowledge, it occurs to me to ask whether it is justified to lay so much stress upon the therapeutical value of the quinine treatment, simply because the mortality has decreased after an application of only two years duration. The period of observation is much too short, the figures are much too small, because 60 cases in a year do not permit the drawing of reliable conclusions upon the efficacy of a mode of treatment, and especially outside of a hospital. How easy is it for outward circumstances to obscure results and chance to play a trick. I certainly miss here the exact controlling observations during the same period which might have explained eventual epidermic influences upon the mortality. As already mentioned, I have to report similar fluctuations in spite of uniform treatment.

I respect greatly the authority of the experienced observer. I willingly and gladly acknowledge this experience of Aufrecht, but still venture to ask whether it may not be possible that the irritation of the sensitive cutaneous nerves through the quinine injection has reflectorily excited a stimulating effect upon the central nervous system. Neither am I able to understand the combination of chininum tannicum and iron; here quite a quantity of tannas ferri, i. e., ink, will be formed which undoubtedly has considerably diminished the quinine effect; likewise, I do not quite comprehend why the pneumonic patient with his coated tongue and febrile dyspepsia should take large doses of iron in the acute stage of the disease. Personally, I prefer to wait for further experience, and so far I have not become enthusiastic as to subcutaneous and therefore rather troublesome injections of quinine. I cannot dismiss the thought, also, that, if the case takes a favorable course under treatment with quinine, a cure might have been effected without employment of this treatment.

But, on the other hand, I am convinced that if no toxic doses of quinine are given, this remedy will at least have no injurious influence upon the patient. For some it may even prove beneficial as a nervine, a euphoric and possibly also as a tonic. In principle, I do not oppose the application of quinine in moderate doses.

Italian investigators, led by the eminent Semmola,* of Naples, have tried to neutralize pneumococcic toxins by increased oxidation and elimination, by giving iodid of sodium, which is said to stimulate oxidation and elimination of toxic products. Schwarz, after an early application of potassium iodid and tinct. iodinii in ten cases, saw the crisis appear as early as the second day; this was the case in about 10 per cent. of his 98 cases. A true apostle of this method is also Velten,* who has even thought that a dose of six grams potassium iodid, taken during the first six to twelve hours after the chills, should soon bring about the crisis or lysis. In order that success may be ensured, early administrations is necessary; given later than 24 hours after the onset of the affection, potassium iodid is without favorable effect. This treatment is not likely to become generally adopted, though no one need be astonished that potassium iodid should be tried in pneumonia, because it has been given as a remedy for everything.

By reason of the fact that cases of pneumonia, whose course is without leukocytosis, furnish a less favorable prognosis, remedies have been given intended to increase the number of leukocytes circulating in the blood, to produce, in a word, an artificial leukocytosis. Such remedies are pilocarpin, antifebrin, antipyrin, nuclein, digitalis, hydropathic measures, etc. Plausible as this theory may be, suggested principally by Professor von Jacksch,* confirmatory results are still lacking, as far as I know.

Finally, Mosler** has introduced tartarus emeticus

*Semmola and Ferrara Pathogenesis and Treatment of Pneumonia. Internat. Klin. Rundschau.
**Berl. Klin. Wochenschr., 1881, p. 129.
*Specific remedies for pleurisy, pneumonia and stiff neck. Berl. Klin. Wochenschr. 1893, No. 10.
*On the prognostic treatment of the leukocytosis occurring in croupous pneumonia. Centralblat fuer Innere Med., 1892, No. 5.
*On the treatment of genuine pneumonia (Physicians Society in Stralsund). Deutsche Med. Wochenschr., 1887, No. 47.

in moderate doses (0.1—0.3 gram.: 200 h—0 2 he) into the therapy of pneumonia, and believes he has observed favorable results. He contends that by a copious blood supply to the lungs the microbes and toxins would be, as it were, washed out. Although he adds himself that this is not a specific, still Mosler is of the opinion that it might favorably influence the course of the disease. As far as I know, this method has not been generally adopted. The experimental proofs on which this method is based are not such as to render one enthusiastic of its application. Here, also, the number of the cases observed appears to be too small. Of course, it is known that small doses of tartarus emeticus are given as expectorants in pneumonia.

I come now to a class of remedies and sanatory methods which for various reasons have been and are still frequently made use of. Their application is based partly on empiric, partly on theoretical and unfortunately often erroneous conclusions. I name first the so-called antiphlogistica, once the cardinal remedies of the art of healing. Above all, venesection should be mentioned. It is well known that the older physicians, with Bouillaud at their head, laid such a stress upon this little operation that it once was accorded the place of the remedy *par excellence*, as the *summum bonum* of pneumonia. It is extremely interesting to read the works of Bouillaud and his enthusiastic expressions upon the value of blood letting. They create the impression that the therapy of pneumonia has been finally decided upon. "Bleed, if necessary, *coup sur coup*." But after half a century views have so changed, that at the present day venesection as a means to combat the inflammatory process is no longer practiced. It would be considered a decided retrogression if venesection were again adopted to the same extent. Dietl's celebrated monograph, *Der Aderlass in der Lungenentzündung*, the perusal of which today still presents a source of enjoyment and instruction, has demonstrated practically *ad oculos* the uselessness and sometimes injuriousness of a general blood-letting.

One naturally asks how was it venesection so long maintained itself in the treatment of pneumonia? It may be in part because the immediate effect of venesection is undoubtedly often most comforting to the patient. Undoubtedly, the dyspnea becomes less, the pain more bearable, the disposition to cough decreases, the fever subsides, sleep improves, the cerebral symptoms decline and sleep is induced. In short, everything indicates that the inflammatory process has been broken and an artificial crisis produced! It may be possible the character of the disease has changed somewhat, that individuals then reacted in a different manner to the inflammatory irritation than in the present epoch of anemia, neurasthenia and other functional neuroses. In fact, the question naturally arises, may we not have gone to the other extreme and ignored too completely this now much neglected therapeutic measure? Is it not possible that in this case the kernel has been thrown away with the shell? I believe venesection under certain circumstances is still indicated in the therapy of pneumonia; and the selection of the right moment for venesection to be the touchstone of clinical experience and judgment. When the patient becomes very dyspneic, and at the same time is very cyanotic, with congested face, ectatic jugular veins and dilated right heart with small, tense, not too frequent, and, therefore, suppressed pulse, I consider venesection still indicated to-day, as it here facilitates in a purely mechanical manner the unburdening of the heart and of the blood circulation. Then one can observe that the arteries distend, the pressure decreases, the dyspnea and cyanosis become less. Done at the right moment, venesection may be of life-saving importance. Furthermore, venesection may be indicated in threatening or existing edema of the lungs, which, through compression of the capillaries and obstruction of the finer air-passages, may interrupt admission of air and threaten suffocation. In such a case a far advanced cardiac weakness, especially of the left ventricle, is almost always the direct cause of this grave condition. Besides stimulating remedies which arouse the weak function of the heart, a lessening of its labor by reduction of the quantity of blood to be moved—therefore venesection—should be considered as *ultimum refugium*. However, my experience with this indication is not favorable, and I was unable to prevent the lethal termination in two cases by venesection. The physiological effect of venesection is apparently not understood.

I pass over the other so-called internal antiphlogistics (veratrin, tartar emetic in large doses, mercury), because, fortunately, their reign has terminated. It must be considered an important, though negative, advance that these heroica are entirely banished from the therapy of pneumonia. Whoever compares the thoughtless and strongly acting polypharmacy of former centuries, which was in direct opposition to the first principle of the art of healing, *ante omnia non nocere*, with the modern much simpler methods of treatment of pneumonia, will know how to appreciate the blessing which was a consequence of the temporarily exaggerated nihilism.

Now I come to the formerly, and still much used digitalis, a remedy which is as yet unsurpassed by any other cardiotonic. Thousands upon thousands of pneumonics have used the popular fox-glove, so that here also the well-known verse of Bock would be in place:

"For all these evils to arrest,
Red glove of fox will be the best."

The fact that its application was supported by the authority of so acute, earnest and independent an observer as Traube, who thought that digitalis was able to arrest the pneumonic process, explains the liberal use which is made of digitalis, principally in Germany. Fortunately, it is banished from the domain of therapy as an antipyretic, since we know that its antipyretic effect is connected with a more or less pronounced collapse. As a cardiotonic which synchronously discharges the pulmonary circulation and renders it more favorable, digitalis is still frequently used in moderate doses in pneumonia, especially as a prophylactic remedy against an eventual weak cardiac action. Although I fully acknowledge the justification of this application, I wish to emphasize that just here the signs of true cardiac weakness which one considers so valuable as indications for the salutary effect of digitalis (arrhythmia, dilatation of the heart, edema, hepa-

tonicus, etc), therefore, an engorgement of the blood, are entirely absent. According to my opinion, cardiac insufficiency in acute diseases is much better and quicker combated with stimulants, especially with camphor in appropriate doses, than with digitalis. It appears to me questionable whether it is at all judicious to forcibly reduce the frequency of the pulse, which is expected to be done by digitalis. I would like to ask: Is it not possible that sometimes the frequency of the pulse may represent a compensatory manifestation? I regard this cardiac tonic, which I otherwise value highly, in its place only when pneumonia attacks a cardiopathic, or when the disturbed activity of the heart becomes prominent as in a cardiopathic, with an insufficient supply of the larger and an over-supply of the lesser circulation; therefore, an engorgement of the blood occurs, characterized by a small, frequent, unequal and irregular pulse. But under these circumstances I give digitalis not so much because he is suffering from pneumonia, but because he has heart disease.

The application of very large doses of digitalis (from 12 grams in infusion to 200—in 24 hours) in pneumonia has caused a great deal of excitement. Petrescu,* depending upon the experiences and investigations of his disciples (Brailov, Constantinesku) is known to be the first who ardently advocated this method which has been practiced by him since 1881, at the Medical Academy in Paris in 1888, and later at the International Congresses in Berlin and in Rome, as he expressed it, *pour juguler la pneumonie*. He believed by large doses of digitalis to be able to cause an actually preventive effect upon the pathologic process and to lower the mortality to almost zero.** Within ten years Petruscu treated about 825 cases of pneumonia with daily doses of 4.8 g. digitalis infusion and had a mortality of 2.06 per cent. Later, in 1894, after an experience of 13 years, when he had treated 1192 cases, the mortality was slightly higher, but did not amount to more than 2.66 per cent.

The sensational experiences of the Bukarest investigator did not remain uncontested. As could be expected, his method gained adherents (Fikl,* Höpfel,** Lépine, Huchard, Masius) and adversaries (Löwenthal,*** Rubel,**** Reiner). But several physicians, and among them some very prominent ones, came to the conclusion that the application of such large doses with careful supervision of the effect was not only admissible, but actually accompanied by success in the treatment of pneumonia. Maragliano***** went furthest in ascribing to digitalis *ad alta dose* a neutralizing effect upon the pneumotoxins and placed it in a line with the pneumonia serum. In fact, this Italian investigator is even of the opinion that the pneumonic patient can only endure these large doses of digitalis which would prove destructive to healthy individuals, because digitalis *à hautes doses* and pneumotoxins neutralize each other.

He tried to support this view experimentally. The conclusions, drawn from the experiments made, appear to me, however, as insufficiently founded. As mentioned, the experiments *in vitro* cannot immediately be applied to the much more complicated human organism. As far as I know, other observers have not found so specific an effect. In Germany, the views of Petrescu met with a rather cool reception. A. Fränkel,* however, came also to the conclusion that favorable results may be accomplished with large doses of digitalis in the hands of a judicious physician. Unfortunately, he gives neither figures nor proofs, but impressions only, and he has tried this treatment in quite recent cases admitted to the hospital between the first and third day after the onset, never in patients with primarily pronounced cardiac weakness. Upon the whole, Fränkel's communications do not show any great enthusiasm in favor of this method.

National peculiarities appear to have influenced this controversy. The warmer and the more fiery the blood pulsates through the veins, the greater seems to be the enthusiasm with which digitalis *à hautes doses* is greeted. Under the clear, blue sky of Italy, it is even called a specific for the toxins circulating in the blood, in Roumania, with its oriental tinge, the home of this method of treatment, it is regarded with filial affection, in France, where the blood is still easily excited, it has ardent supporters. In Vienna, the number of adherents commences to decrease, although a few may still be found. In the northern part of Germany its apostles have to be looked for with a lantern, and in cool phlegmatic Holland, the country of Boerhave and of calm deliberation, the method has no adherents, in fact, one is suspicious of it!

It seems to me that from all this may be concluded, (1) that large doses of digitalis can be borne for a shorter time than may be expected from theoretical deductions; (2) that here, as well as everywhere else, the individual reaction upon large doses is subject to great fluctuations; (3) that which I consider to be the main point, although the admirers of this digitalis therapy have furnished cases of pneumonia which have recovered with large doses of digitalis, yet they have failed to prove that it was just this heroic application of the remedy which caused the favorable termination.

With just as much right, I think, it might have been maintained that the pneumonia was cured in spite of the large toxic doses. To begin with, it is evident that it is possible to reduce the frequency of the pulse and the high temperature, but it is very questionable whether this was beneficial for the patient. One also gains the impression that a strict differentiation between collapses in consequence of digitalis intoxication and an abortive course of the disease has not always been observed. Furthermore, it is not necessary to administer such dangerous doses of digitalis in order to achieve a simi-

*On the Treatment of Pneumonia with large doses of digitalis. X. Internat. Congress in Berlin. 1890. Wien. Med. Presse, 1893

**The Treatment of Pneumonia with large doses of digitalis. Wien. Med. Wochenschrift, 1890.

*The Treatment of Pneumonia with large doses of digitalis. Wien. Med-Wochenschrift, 1890.

**Contribution to the Digitalis Treatment of Pneumonia. Ther. Monatshefte, 1891.

***The Treatment of Pneumonia with large doses of digitalis. Centralblatt f. d. ges. Ther., 1890.

****On the Treatment of Pneumonia with large doses of digitalis. Moak. Congress, 1896.

*****La cura causale della polmonite colla digitale ad alta dose. Ref. Centralblatt fuer Innere Medicin, XLI, 1898.

*On the treatment of pneumonia with large doses of digitalis. Die Therap e der Gegenwart. 1897.

lar success. Thus Aufrecht saw of 379 cases of pneumonia without digitalis from a class of people who go to the hospital only of necessity—at the age of from five to 20 years—a mortality of 11, which is equal to 2.64 per cent. Still more striking are the figures of Riessell,* who saw of 127 cases, individuals between 20 and 30 years of age, only two deaths, therefore a mortality of 1.8 per cent. without digital is. It is also to be considered, that Petrescu made his observations in a military hospital on young, strong men, therefore on picked material, and he himself emphasizes that his mode of treatment is a failure in grave cases of pneumonia, consequently his mortality percentage has only reference to mild cases. Fränkel likewise states that he excluded the cases with heart defects, ergo the graver ones, and just these are the ones, I think, on whom this mode of treatment should have been tried, because the mild cases would certainly have been cured without it as well. Therefore, I am not in a position to defend this mode of treatment, and I believe that the patients were cured not on account, but in spite of the administration of digitalis. It is this consideration and the eventually threatening danger of collapse which prevented me from employing this method.

I omit the considerations of certain other remedies which have been recommended as possessing a favorable effect upon pneumonia itself (inhalations of chloroform, of oxygen, infusions of salt solutions, creosotal, calomel), because their application is but weakly supported, or because determining knowledge is wanting.

To sum up, I would state that according to my opinion, we as yet possess no remedy by means of which we are able to shorten the course of the so-called croupous pneumonia, or could immediately favorably influence the pathological process itself. I cannot refrain from thinking of the appropriate words of my much revered friend and colleague, Stokvis, which he has incorporated in his admirable lectures on pharmacology, and which contain a good deal of truth: "There is no disease in the therapeutic circus which is so comparable to the trained horse as pneumonia. If it triumphantly clears hurdles and hedges, these feats of strength are not due to the whip of venesection, of tartarus emeticusfi of veratrin, of digitalis, in short, to medical training. but to its own admirable qualities."

It would be a fact as yet unparalleled that a disease which, like pneumonia, in by far the most instances, is conditioned upon a distinct kind of micro-organism, should be favorably affected by heterogenous remedies like pilocarpin, salicylate of sodium, iodids, serum, digitalis, quinine, inhalations of chloroform and oxygen, *et tutti quanti*. Properly speaking, we only know four infectious diseases which we are able to manage to a certain extent. Against malaria we have only quinine, against syphilis only mercury and iodids, against rheumatism of the joints only salicylates or related bodies, against diphtheria its antitoxin! Therefore, only *one* good remedy is at our disposal to combat these affections. Does not this alone speak in favor of the fact that one has frequently quoted *post ergo propter*, without sufficient reasons, and that the cure of pneumonia did not take place by means of, but with or in spite of the application of those remedies?

Therefore, one should not, I think, interfere with the pathological process, so that the natural healing qualities of the diseased organism may perform their duty unimpeded, i. e., the less the physician interferes with the normal course of pneumonia, the greater the probability of a favorable termination. It seems to me that a pneumonic patient is better taken care of by a quietly observing physician who only treats symptomatically, than with one who thinks he is able to stifle the disease in its germs by heroic, so-called specific remedies.

But non-interference means doing something more than looking on and letting matters go by the will of God, as was once laid at the door of the Vienna School. He would be but a poor captain who leaves the ship to its fate, because he is not able to subdue the gale. It is just his high duty which must not be underrated, to steer his ship clear of breakers and cliffs safe into the sheltering port. A similar duty is that of the physician at the sick-bed of a pneumonic patient. For him remains the delicate and important task of bestowing upon the patient the benefit of a thoroughly understood hygiene, the blessing of a mindful care, the advantage of appropriate diet, and the alleviation of the most tormenting symptoms,, so that the conditions for natural recovery assume correspondingly favorable prospects! This symptomatic therapy—purposely I do not say expectant treatment—is often unjustly looked down upon with contempt. This view, however, can only take form in consequence of superficial contemplation. I personally at least consider this symptomatic therapy to be of great importance in the treatment of pneumonia. Is it, I ask, not an invaluable privilege to alleviate pain, to lessen debilitating irritation and cough, to reduce expectorations, to prolong life by well-considered measures, and thus gain time, to guarantee the organisms the full development of its compensatory and regulative functions?

It is the first duty of the physician in every case of pneumonia to look after hygienic-dietetic directions: pure air, neither too hot nor too cold, often changing the position of the patient, a careful attention to skin and mouth. Nothing should be too small, too insignificant, for him, because success often depends upon the sum of the trifles. It must be considered a special merit of von Leyden that he always directs the attention to such so-called trifles. Precisely the exact consideration of each and every condition which may be of value to the patient shows the far-seeing, cautious and conscientious physician.

The diet should be digestible (liquid or pulpy), strengthening and nutritious, and ought to be administered in frequent, small doses. Milk and milk-foods, soup, bouillon and eggs are given in appropriate quantities. Abundant drinking not only quenches the often tormenting thirst, but also promotes eliminations and consequently the purification of the juices of the body. The headache is often made bearable by application of cold. I do not know of any better remedy during the first days of the affection for the torturing and weakening irritation of cough, for the difficult expectoration and

*On the etiology of croupous pneumonia. Quoted after Aufrecht.

the painful stitches in the side than the venerable Dover's powder, which will satisfy all indications and which was often used as a dyaphoretic in pneumonia during the second quarter of the 19th century, when the *Frigus unica causa pneumoniae* was regarded as an axiom. Besides this, one may, of course, try to alleviate the frequently very tormenting cough by simpler remedies, and by psychical influence. If respiration is rendered difficult by severe stitches in the side and disturbs the rest of the patient, I consider superior to everything a small, or,, if necessary, an often repeated morphin injection at the aching places. This will at the same time cause a beneficial rest and a lessening of the weakening cough. The great value of these injections can only be fully appreciated by those who have seen their beneficial effect or have experienced them in their own body. I cannot understand the objection which Eichhorst recently raises against these injections (*Therapeutische Monatshefte*, February, 1900 - *Die Behandlung der Fibrinösen Lungenentzündung*). He is afraid that the patient might be in grave danger of suffocation in consequence of the artificial suppression of the irritation to cough and of the accumulation of the sputum which may fill up the breathing passages. This danger seems unlikely, because the doses of morphin are entirely too small. In strong patients cupping or leeches may accomplish a good deal to lessen the stitches in the side. Whoever is afraid of morphin may try to allay the pain in the chest by subcutaneous injections of carbolic acid, while in milder cases moist-warm poultices or in others ice-bags or ice compresses, according to the individual reaction, should prove advantageous. The stools should be regulated with a *Haustus aquae laxativae* or with another purgative; very troublesome, also, are the long sleepless nights. Although it may be difficult at times to interfere here successfully without doing harm, the wishes and the want of rest of the patient should be taken into account as much as possible. The application of hypnotics in the proper sense not being very judicious in this case, one should try to satisfy the patient by simple means that act suggestively. I just touch upon the fact that here, also, Dover's powder and morphin injection often answer the purpose.

Towards the end of the first week when the physical examination discloses rales, I usually prefer to administer an expectorant in order to liquefy the secretions and to facilitate and promote expectoration. The choice depends probably more upon the subjective opinion and experience, than upon a firmly founded indication. Instead of the powder I usually give a mixture with a few grains of liquor ammonii anisatus with or without ipecacuanha-infusion. This medicine is taken well, does not disturb the function of the stomach and at the same time it stimulates slightly. However, I do not mean to contend that one could not do without this remedy.

It is difficult to pass a correct opinion upon the actual therapeutical value of expectorants. At least I hope I have benefited my patients with them, although I could never be convinced that I could save the life of any one by them. At any rate, these remedies do not harm and they are not as disagreeable as the other expectorantia acria: Senega, ac. benzoicum and ammonium carbonicum.

At the time of the crisis and after, the function of the heart and of the nervous system should be carefully watched, but I prefer to refrain from unnecessary excitants. By reason of ample experience I have to designate this mode of treatment as the best, which allows the natural curative faculties full power, does not annoy the patient, consequently unites in itself the *tuto, cito et jucunde.*

During the period of convalescence I do not allow the patient to rise until all the local symptoms have disappeared, the strength has returned, the condition of the blood has improved and the pulse has become strong and normal again. It is just here where errors are committed. The younger the physician the sooner he permits his still weak convalescent to rise. The popular belief is much propagated that long rest in bed weakens the body, and therefore the desire is but natural to get out of bed as soon as possible. But this belief is absolutely wrong. In health unnecessary rest in bed is injurious, but for sick and weak individuals it is strengthening. One has also to consider that the convalescent, after an acute disease, is very susceptible of changes of temperature and other irritations. Consequently, special care should be observed not to take cold. Tonics, principally iron, may favor the cure of the remaining anemia. The physical strength will return with nutritious food, but the administration of iron will promote it. Pneumonia is a real destroyer of blood, and I opine that *qui nescit Martem, nescit artem.*

The irregular, atypical pneumonias, however, make higher demands upon medical science. As I have mentioned, certain changes of the constitution with perverse reaction upon irritations, with lessened resistance, favor the abnormal course. In a general way, the pulmonary symptoms step into the background of the pathological picture while those of the disturbed cardiac and cerebral activity become more prominent. Conditions of temperature may also alarm us here, which are either too high or too low. But almost always it is the cardiac weakness as well as the weakness of the body in general which first demand the attention of the physician. They require a stimulating treatment, and success depends upon seizing the right expedient and the right moment. Here, too, the word of Göthe holds good: *Und wer den Augenblick ergreift, der ist der rechte Mann.* Much as I am afraid of a too early and unnecessary application of irritants, just as much am I convinced that the life of the pneumonic patient may be saved by a stimulant administered at the right time. Consequently, the life of the patient may here be in the hands of the physician, as in a collapse or under circumstances when one is able to prolong life until more favorable conditions set in.

How may we best combat cardiac weakness? First of all is alcohol. This remedy has always played an important part in the therapy of pneumonia and does so yet. It goes without saying that there is no unanimity among clinicians as to the value of alcohol as a stimulant and aid to nutrition. This must be further favored by the immensely intricate conditions of the life of the patient. There

are some who value alcohol very highly for the feverish, others who detest it, too. The sentence holds good here also: *Il ne merite ni cet excès d'honneur, ni cet excès d'indignite.* The adherents support themselves by the nourishing, albumin-saving, stimulating effect of alcohol. It was principally Germain Sée also the clinician Juergensen,* who reasoned so well of the theory of pneumonia, who were ardent advocates of the alcohol-therapy previously recommended by Todd. In Tübingen almost every pneumonic patient gets his liter of wine per day. This may possibly be caused by the material of patients, who, on account of their occupation, are predisposed to cardiac weakness and, in general, are more accustomed to wine. The theoretical foundation of the alcohol-therapy, though, is but weak, because, in spite of many and manifold experiments, the albumin-saving, nourishing effect which is ascribed to it, does not appear to be well founded. Certain is only the fact that it is burned in the organism, and therefore it may be a calorifacient. A great difference of opinion prevails regarding its saving properties; but in general it is presumed that alcohol is not albumin-saving, but fat-saving. Its antipyretic effect, too, is very insignificant and only takes place in toxic doses. However, here, too, experience at the sick-bed should be the highest court of appeal, and I would not like to miss alcohol at the bed of the pyretic patient. Here the impression is produced of a stimulating, strengthening effect upon the morbid organism by alcohol. I admit willingly that alcohol in general, except in septic conditions, is often used unnecessarily and in excess. Before all, I wish to caution against causing over-excitement through alcohol. One should be very careful and cautious with youthful individuals generally; with the aged it is not necessary to be so particular . The old saying: *Vinum juvenum venenum, lac senum* has a certain right at the sick-bed also. I canot quite comprehend why a pneumonic patient should take this stimulant if he does not show any symptoms of weakness of the heart, and did not use alcohol at all or only very moderately. Besides, some people are at once subject to congestions of the head; they feel uncomfortable after its use. In these cases alcohol does not seem to be advisable, except for very urgent reasons; on the contrary, it is injurious. But all this proves again that in this matter, too, individual reactions should be considered. Otherwise experience teaches that a pyretic patient can well bear the alcohol and much better than in health. It is not at all proven, that the often observed depression which follows the increased function in healthy individuals after the use of alcohol, also occurs in the pyretic.

I consider the administration of alcohol indispensable in pneumonic alcoholics, and believe it would be a grave error of judgment to withhold the stimulant from these individuals who are used to whisky, wine or beer. Just as much would it be a sin of omission to deny morphin to the pneumonic patient who is in the habit of using it. Here alcohol and morphin are the best prophylactics against collapse, general debility and cerebral symptoms. I also like to administer small and frequent doses of alcohol (with water or in milk or with egg, preferring brandy) to weak and debilitated individuals, whose general state of health as well as the function of their heart is not satisfactory. The time before and after the crisis is an important one for the administration of alcohol. Threatening collapses are best combated and prevented by small, frequent and warm, doses, which display a rapid and very desirable effect. In these cases champagne is the most excellent alcohol. In acute attacks of weakness of the heart, it goes without saying that the other analeptics (hot coffee, tea, irritation of the skin, ether, camphor) may also be applied. The most reliable analeptic in threatening cardiac weakness is camphor, primarily given in small doses internally, in more threatening danger of life in large doses and subcutaneously in combination with ether. I am fully convinced that I have saved the life of several pneumonic patients with this therapy who were threatened by collapse particularly before and especially after the crisis. I accomplished it by aiding them to tide over the critical moment. In other cases, however, in which a weak and frequent action of the heart was alarming at the beginning, I have vainly tried to overcome the danger by stimulants. The experienced observer will soon recognize these grave, almost always atypical cases. As previously mentioned, I prefer this excitant to the other so-called cardiacs. It is true, different factors causing weakness of the heart are to be considered; but it will be difficult to always correctly judge these intricate conditions during life.

As a stimulating and refreshing procedure, I attach great value to regular lotions of the generally dry and hot skin with cold or tepid water to which a little vinegar, Cologne water or brandy has been added. This ablutions I have done every one, two or three hours regularly; they are very refreshing, and beneficial at the same time. These slight irritations of the skin may act reflexly favorably upon the functions of the vital bulbar centers and may possibly secondarily influence the elimination of injurious elements by increased metabolism.

I do not agree with the view that a great rise of temperature is generally always a cause to reduce it *per se*, because I do not consider the often maintained danger of fever-heat for the apyretic individual as supported by one single fact. By reason of clinical experience and of pathological experiment, I think that I may state that the pathological importance of the fever does not so much depend upon the intensity and duration of the increase of temperature as upon the cause, the etiology, i. e., upon the condition of the disease generators.

Here, again, it is understood that the constitution and the individuality of the patient plays an important part. If I am not mistaken, I believe that those investigators who still consider the fever-heat to be the greatest danger of acute infectious diseases have not sufficiently taken into account the importance of the etiological moments. Although I am aware that it is not at all easy to positively state which share in the genesis of the disturbances of function is to be ascribed to the increased temperature on the one hand, and to the infection as

*Croupous pneumonia. Contemplations from the policlinic in Tuebinger, 1883.

such on the other, yet they have, without convincing reasons, held the high temperature responsible for the frequency of the pulse, and of the respiration, for the altered metabolism, the so-called febrile consumption, the interrupted function of the central nervous system, the albuminuria, the changes in the blood, the increased elimination of urea, the trophical disturbances of the skin and of the muscular structure, and also for the parenchymatous degeneration of internal organs, although both clinical experience and experiments have positively demonstrated that here much is to be laid to the door of the infection *qua talis*. On the other hand, I willingly admit that the increased frequency of pulse and respiration and the decreased tension in the arterial system may depend upon the increased temperature. The noted experimental investigations of Rosenthal, Naunyn and Krishaber have elicited facts which do not at all argue in favor of the detrimental influence upon the animal body of the increased temperature.

If I refer to the clinical experience, this is the last to illustrate the danger of fever-heat. Who has not observed cases of pneumonia and typhus in which the fever was comparatively low, but in which the manifestations of the heart and of the central nerve system gave so much more occasion to fear a fatal termination of the disease? Cases of which our experienced Gerhard so strikingly said, that one would be glad if the patients would have a little more fever. Furthermore, I call attention to the aseptic fever of Genzmer and Volkmann, in which the patients, in spite of continued fever up to 40° C., during about two weeks, passed the time with playing cards and other games in perfect well-being! I ask you kindly to compare this remarkable euphoria and the comparative well-being of the recurrence patient whose temperature has risen to 42° C., to the somnolent condition of the typhus-patient, who, with low temperature, is delirious, sleepy, pulling his blankets, and with trembling limbs is tied to the sick-bed!

It is not necessary to ascribe the smaller mortality of the last decades to the artificial antipyresis, because it can be explained quite easily and naturally in a different manner. It is easily accounted for that sometimes there is a certain connection between the intensity of the disease and the increased temperature—as yet the only objective scale of fever. The increase of temperature is in itself the consequence of the effects of bacteria-products upon those nerve centers which under normal circumstances so remarkably regulate the reaction between production and communication of heat.

To correctly estimate the pathological importance of the fever for the morbid organism, we as yet have no unobjectionable measure. Is the fever possibly curable? Is the patient's fever *in suam salutem?* Is the statement of the great physiologist, Pflüger: "The fever heals clarifying by fire" actually correct? I believe it is possible, even probable. The constant occurrence of fever almost forces the thought upon us that it really is a judicious reaction of the infected organism, which is to its advantage. It would be difficult to comprehend, with the almost unlimited compensation of the human organism, if this always recurring manifestation should not be of a certain importance for the affected individual! It may be possible that, in consequence of the increased processes of oxidation, the fever generating material becomes gradually destroyed! Furthermore, the bacteriological fact, that many pathogenic bacteria thrive indifferently at a temperature of 40° and above, speaks rather in favor than against the salutary effect of an increased temperature. Clinical experience also supports this view, because the prognosis of acute infectious diseases is worst where grave general symptoms are accompanied by low temperature! The experienced observer in such cases prefers a good reaction of fever to a lowering of the temperature, just as much as one likes to see a strong local reaction of the tissue upon inflammatory irritation.

In consideration of these conclusions, I have for quite a long time refrained from applying artificial antipyresis. In pneumonia there is so much less reason for an antipyretic treatment, because the pathological process generally takes a very rapid course. Then, also, it is possible that antipyretics themselves may display injurious by-effects, upon which fact I need not enlarge here. I do not object to the occasional administration of small doses in order to accomplish a euphoric effect.

But I am no dogmatist in this respect either, because here, as always, it depends upon quantitative conditions. The temperature may rise to such a degree that animal life is incompatible with it. Truly, such are exceptional cases, but when they occur, I try to lower the temperature and do so by refrigeration. Eventually, I also like to apply ice bags to the head and to the heart.

As mentioned, I highly appreciate a judicious hydrotherapeutic treatment. But this cannot be called an antipyresis in the more proper meaning. The irritation which the cold or tepid water exercises upon the nerves of the skin, the reflectory excitements caused thereby of the highly important centers in the medulla oblongata, I consider to be of an importance which cannot be overrated. One will fully accomplish the purpose with cold lotions comfortable for the patient. I could never be induced to put my coughing and dyspneic patient into a cold bath. In fact, the clinical experiences regarding the advantage of the cold bath in pneumonia differ widely. The views are diametrically opposed. Marchand* even assumed that the cold baths might favor the termination of pneumonia in induration, while Jürgensen suggested the possibility that a reduction of the temperature of the body, by the application of cold baths, might impede the further development of the cause of the infection. Of course, neither of these views have any foundation. One agrees only in one respect, namely, that there are quite a number of contra-indications. With others, I believe that one should rather forego a mode of treatment which is not necessary.

In stopping expectoration, one generally prescribes the *expectorantia acria*. (Senega, ac. benzoicum, ammonium carbonic.) It is difficult to correctly estimate their advantages. According to what I have seen, their irritating, strong, disagreeable taste is far more certain than any favorable effect upon expectoration, although I do not deny

*On the termination of pneumonia in induration (Pneumonia fibrosa chronica carnificatio) Virch. Archiv, 1880, Vol. LXXXII.

that they sometimes dissipate the cough. In this case, I also decidedly prefer the previously mentioned liquor ammonii anisatus. It is understood that the excitants mentioned before may indirectly act upon an increase of expectoration.

Severe diffuse bronchitis may demand the application of derivants and skin irritators (sinapisms, dry and wet cupping).

Attacks of pulmonary edema are almost exclusively the consequence of cardiac weakness and should be considered as engorgement manifestations, but exceptionally they may be of an inflammatory character. Excitants with skin irritators should be employed here, in rare cases venesection, as previously explained. Extensive sinapisms and injections of camphor with ether have proven to me to be the most effective against this complex of symptoms which often announce the near approach of death. I leave it undecided whether plumbum aceticum really has the therapeutic effect here which Traube ascribes to it.

Not enough stress can be laid upon the conscientious observation of the cerebral symptoms which often appear, principally in inebriates, but also in other pneumonic patients, after the crisis. The delirious patients or convalescents are apt to suddenly and unexpectedly leave the bed and thus harm themselves and others. It follows that they require a constant surveillance, day and night. The most effective remedy for the treatment of delirium tremens and similar conditions, and for many disturbances of the central nervous system, which are sequelae of pneumonia, for instance insomnia, is chloral hydrate, if neccessary synchronously with stimulants, and of course with careful observation of the activity of the heart. Clinical experience has so strikingly demonstrated its excellent effect in such cases, that neither theoretical objections nor the results of experiments are able to depreciate the value of this practical therapeutical remedy. Otherwise opium and particularly morphin—subcutaneously—is the remedy indicated.

Furthermore the question is urged how far are we able to prevent an abnormal termination of pneumonia in delayed resolution, abscess formation, gangrene and induration. Often again certain anomalies of the constitution favor this undesirable outcome. To prevent this the chances are best, the sooner the previously mentioned steps are taken, in the first place hygienic-dietetic measures. Against abscess formation, severe purulent expectoration and gangrene of the lungs it is customary to prescribe balsamics and particularly ol. terebinthinae, which remedy has gained the confidence even of the otherwise sceptical Skoda. It is difficult to decide whether this reputation is justified. I use the remedy because I have no better one. The urine should be watched during its use. We are practically powerless against retarded resolution. Fortunately, often the scarcely expected spontaneous resorption still takes place, though late. Besides rest in bed, nourishing food and tonics, moist-warm poultices are to be considered.

It is very difficult to form a determining opinion how much are here indicated the parenchymatous pulmonary injections (with sublimate) once proposed by Lépine,* and the *abscès de fixation* first mentioned by Foucher.** As far as I know the former method has not found any supporters, rightly according to my opinion, the second is only occasionally used in France, Guillaument*** of Nancy and Senn**** of Geneva report favorable results. The results in von Leyden's clinic, however, were not encouraging and do not invite further imitation of the treatment, neither am I impressed with another effect claimed for this treatment, viz., an action favoring the increase of leukocytosis and possibly a chemotactic action although I have seen favorable results in a case of puerperal infection. Again I call attention to the occasional delayed spontaneous resorption of the infiltrtion.

The eventual complications and sequelae of pneumonia require the usual treatment, but I wish to call attention to the frequency of metapneumonic empyemata which may simulate a retarded resolution. They require surgical treatment although small empyemas, particularly in the young, may heal spontaneously.

To sum up I wish to say that in general a stimulating treatment, besides the self-understood hygienic-dietetic steps, offers the best chances for recovery in atypical cases of pneumonia.

My experience which is based on more than 1200 cases is favorable to this principle. I do not name any figures because they do not mean much in view of the number of my cases. I only wish to emphasize that I have seen grave pneumonias cured in emphysematous patients, and that I have still in memory a case of bilateral pneumonia in a grave case of kyphoscoliosis, in which the patient was not blue, but actually black in consequence of the severe cyanosis, and who was able to breathe in the knee-elbow position only. If I had therapeutically interfered in this case with quinine injections, with large doses of digitalis or with cold baths, I could not have helped thinking that the favorable termination of the affection was due to this interference. Whoever has seen such desperate cases to recover might almost believe in miracles. And what experienced physician has not once seen such a case?

In conclusion: Although I do not underestimate he value of the old medical principle not to accept therapeutic recommendations, even those appearing most rational, without trial, nor to reject untried those that appear less rational, no clinician can be expected to try personally all proposed and even recommended methods of treatment. He would have neither time nor cases to permit it. I must also add that the older and more experienced one grows the more skeptical one becomes as to new remedies.

I can imagine that I have disappointed many of you, because I have, in my opinion, insisted so plainly that we are as yet unable to interfere actively with the pathological process of pneumonia. This comparative helplessness is not unnatural when we

*On the local treatment of fibrinous pneumonia by intra parenchymatous injections. Compt. rend. de l'Acad. des sciences, 1885. Aug. ref. Centr. f. Klin. Med. 1886.

**Therapy of generalized pyogenic infections. Lyon Medical, 1891.

***Treatment of some pyogenic infections by provocation of hypodermic abscesses. Thesis, Nancy, 1898.

****Contribution to the study of abscess fixation.

*****Virchow's Archiv. CLVI.

consider thoroughly the extreme complexity of pathological processes in an organism affected with pneumonia. On the other hand, I have also strongly emphasized that a wide range of effective activity is left to the physician in the treatment of this disease, and that he may indirectly, at least, be of the greatest advantage to his patient.

We have spoken of the therapy of pneumonia. The word therapy is derived from *therapeuco*, I serve, I provide, from which gradually the conception of healing has developed. Our Greek ancestors have therefore selected just as superior an expression as the ancient Romans, who used to say *Natura sanat, medicus curat.* The physician actually is not the master of nature, but he is its servant. *Non magister, sed minister naturae!* But there was a time—the unfortunate epoch of heroics—when he attempted to be the master of nature, although Hippocrates long ago said: "Woe to those patients whose physician does not consider himself their servant, but their governor." Fortunately, we have now returned to the epoch of simple medical directions.

"Is the activity of the physician less beneficial for the reason that it is more simple? Is the physician of less value because he understands how to accomplish much with small means? The very simplicity of therapy makes the physician the greatest benefactor of the suffering, and medical science will disseminate its full blessing over humanity only when it will depend more upon judicious advice than upon complicated prescriptions." This was said just half a century ago by the critical and far-seeing Dietl, whose words I repeat because I am not able to express the thought I entertain better than he has done.

But the physician is able to do more. He is also obliged to act prophylactically. Among other things he should see that the constitutions of the patients entrusted to him remain as intact as possible, so that, in case they are attacked by pneumonia, the natural means of defense may be exerted in the fullest and most unrestricted capacity.

On the Treatment of Puerperal Fever.—Aufrecht (*Therapeutische Monatshefte*, Nr. 5, Mai 1901) states that he has observed for five years good results from the subcutaneous injection of quinine in croupous pneumonia, and that under this treatment the mortality was much less in his than in other hospitals. According to earlier experiments of the author, the diplococci of pneumonia are etiologically related to puerperal edometritis and he therefore also employed subcutaneous injections of quinine at the same time with the local treatment. The results were so favorable that he recommends in all cases where after confinement the diagnosis "puerperal endometritis" was justified even when but slight fever is present, that the uterus be irrigated with a carbolic acid solution and that a subcutaneous injection of quinine be given. The author employs the hydrochlorate of quinine dissolved in water, 1.34. As 17 grams of fluid must be injected in order to inject ½ gram of quinine, a syringe like that employed in serum injections is best adapted. The lateral portions of the abdomen are the best places for injection: care being taken that strict asepsis is observed and that the canula penetrates the subcutaneous cellular tissue.

Osteomalacia.—T. M. Rotch (*Med. News*, July 13, 1901) states that the treatment is the same as that for rachitis, essentially dietetic and hygienic. Care should also be taken not to force into use the functions of digestion and absorption, but to allow them to develop gradually until at the time indicated by nature they are ready normally to assume charge of the especial elements of the food which is their peculiar province to digest and assimilate.

Abstracts of Therapeutic Literature.

DISEASES OF THE NOSE AND THROAT.

New Treatment of Hay Fever.—H. Holbrook Curtis (*Med. Record*, July 13, 1901) after a careful consideration of all sources from which he has obtained information, including his own personal experience, believes that the future treatment of hay fever will be found in immunization. Curtis recommends giving two to ten drops of the tincture or fluid extract of ambrosia artemisiae in water three times a day during two weeks, preceding the time when the paroxysm is expected. When there exists a mixed infection (other than rag-weed) and when the case shows a preponderance of asthmatic symptoms, a nasal spray of suprarenal extract may be employed with benefit. The liquor ambrosia which Curtis recommends consists of the fluid extract of rag-weed compounded with aromatics in order to disguise the unpleasant taste and make nt more palatable.

The Treatment of Hay Fever.—E. Klein (*Wiener med. Woch.*, 1901, No 15) emphasizes the importance of quickly emptying the intestinal tract of its contents. He does not advise the administration of calomel in large doses, but in small doses throughout the disease, and in addition a mild laxative. Only in marked diarrhea does he cease administrating calomel and in its place gives subnitrate of bismuth. For meteorism Klein employs menthol and brandy and for intestinal hemorrhages acetate of lead. The author has observed favorable results from the method in 50 cases, provided the treatment was instituted early. He states that it was not rare for the fever to disappear in from eight to ten days.

Inhalation of Sprays.—Saenger (*Münch. Med. Woch.*, No. 21, 1901) concludes from a series of experiments which he made in order to determine the effect of sprays when they came in contract with the organs of respiration, that the fluid does not necessarily penetrate into the deeper air-passages as a spray, for a considerable portion of it condenses on the posterior wall of the pharynx and from there drips down into deeper structures A small portion of the inhalation may penetrate the larynx, trachea, and even the coarser bronchi, unaltered, but such quantities are too small to be of therapeutic value.

DERMATOLOGY.

A Very Simple Method for Applying the Phototherapeutic Method of Finsen.—Lortet et Genoud (*Academie des Sciences*, 1901; *Gaz. Hebdomaire*, 1901, Nr. 15) recommend that a balloon filled with water be interposed between the skin and the source of the electric light, the balloon being placed where the rays emanate. This makes the rays of light convergent and causes heat rays to be kept back. A compressor through which a stream of cold water is constantly passing is placed upon the area to be treated in order that any heat rays may be absorbed. Photometric measurements and experimental investigations on patients, according to the authors, have shown that the effect produced by this procedure is as intense as when the condensor of Finsen is employed.

Generalized Psoriasis Treated with Cacodylate of Soda.—Demange (*Societe de medecine de Nancy, Gaz. Hebdomaire*, 1900, Nr. 55) quotes the case of a fourteen year old girl with generalized psoriasis in whom all other methods of treatment had been without result and who received daily subcutaneous injections of 0.01 of cacodylate of soda. The patient was cured in six weeks. The author calls attention to the importance of employing small doses.

Actinotherapy in Cutaneous Medicine.—W. S. Gottheil (*Med. News*, July 6, 1901) gives the following advantages of its use: First and foremost, it is eminently conservative. It causes no radiodermatitis, ulceration, or loss of hair, such as too often, though sometimes necessarily, occur under the Röntgen treatment. The author knows of no record of serious trouble from its employment. Finsen rightly lays stress upon this point; and to dermatologists it is of special importance, since many of the affections that they are called upon to treat occur upon the face. In the second place, it is entirely painless. This is a great desideratum, more especially in dealing with women and

children. Third, it is effective. New as the method is, there is already concurrent testimony from a sufficient number of competent observers to demonstrate that a powerful therepeutic agent is contained in concentrated light.

The Internal Treatment of Eczema.—While in a few cases of eczema, internal treatment is useless, in the majority of cases, it is not only useful, but is even indispensable. Success will only follow a carefully coordinated internal and external treatment. First of all the personal hygiene must be inquired into, the details of the patients's life, and small errors carefully corrected. Internally, purgatives and laxatives will be needed daily, to keep the intestines aseptic, calomel, salts, etc.; rarely an emetic will do good; diuretics are often indicated; milk diet may be necessary from time to time, especially in children; antipyretics and vasomotor stimulants are generally of service, quinine, digitalis, strychnine, etc.; belladonna will often limit the eczematous secretion,and tonics,iron and arsenic,seem always to benefit the patient. Articles of diet which cause itching must be excluded, liquor, spices, pork, fruits shellfish, etc.; this is true of drugs also. Thus opium, sulfonal, trional, and the bromides are contraindicated in eczema. Arsenic exerts its special effect upon chronic eczema, but the dose will vary in every case. Sulphur is now considered of little use. The alkaline waters will often be of service when the eczema occurs in a gouty or rheumatic individual (*Bulletin Medical*, June 8, 1901, No. 46).

Petroleum for Baldness.—George T. Jackson, (*Journal of Cutaneous and Genito-urinary Diseases*) has given petroleum a thorough trial in some thirty cases of baldness of various sorts. The remedy was employed persistently for from three to seven months, once or twice a day. The result was a uniform one—flat failure in every case.

The Lesions of the Skin Produced by Arsenic.—H. G. Brooke and Leslie Roberts (*British Journal of Dermatology*, April, 1901) describes the effects of arsenic on the skin, based on the recent epidemic of beer poisoning in the north of England. The following lesions were found: Erythemata of various kinds, mostly diffuse, and situated on the trunk and limbs. Some resembled chilblains, others erythema multiform. The color was at first red, but afterward changed to copper. Herpes was common, and always unilateral. Pemphigoid eruptions occurred some time after beer drinking had ceased, and affected chiefly the hands and feet. Hyperidrosis was frequent. Pigmentation occurred both with other skin lesions and independently of them. The color varied from dirty-brown to almost black. The chief parts affected were the axilla, groins and neck; the palms, soles and face being less colored. The characteristic features of arsenical pigmentation is the variation in tint of contiguous areas. The mucous membranes showed no coloration except a blue line on the gums. Hyperkeratosis is characteristic of arsenical poisoning, and was generally found on the palms and soles. In many cases these were covered with arsenical warts. The nails were unaffected in most cases, but in some there was increased rate of growth. The hair was unchanged. Desquamation is the rule in arsenic poisoning. Fatty degeneration affects the walls of the small bloodvessels, leading to ecchymosis. With regard to the mode of action of arsenic, the authors conclude that arsenic and the other members of the nitrogen group differ from all other medicaments by the fact that their action is dynamic and due to the development of active oxygen in the tissues.

Treatment of Lupus with Potassium Permanganate.—The application of potassium permanganate to the treatment of lupus, recommended about one year ago by Katschenovsky, has been tried by Belomsoff (*Res. de Therapie*, LXVII, No. 24). The result was very encouraging. Several applications of the remedy preceded by a 10-per cent. cocaine solution, were sufficient to destroy the diseased tissues, leaving a clean ulcer, which healed under a dressing of iodoform gauze.

PHARMACOLOGY.

The Diuretic Action of Caffeine and Theobromine.—Anten reports (*Arch. Internat. de Pharm. et de Therap.*, Vol. VIII, Fasc. V and VI, quoted in *Brit. Med. Jour.*, July 13, 1901) a series of extensive and important researches on the question of diuresis and the diuretic action of caffeine and theobromine. Opinions have differed much as to the part played by the different renal structures in the elimination of urine According to Bowman, the corpuscular capsule is charged with the elimination of the watery part of the urine, the epithelium of the convoluted tubules secreting the characteristic constituents of the urine. According to Ludwig, the urine is entirely eliminated by Bowman's capsule, and during passage through the convoluted tubules becomes concentrated by the absorptive action of the epithelium. After an analysis of later work, Anten describes experiments on dogs in which the renal circulation was isolated, and an ammoniacal solution of chloride of silver passed through the vessels, the kidneys then being removed and sections examined microscopically. The granules of urate of silver were only found in the lumina and epithelium of the canaliculi, and the ascending limb of Henle's looped tubules; they were absent from the glomeruli The conclusion arrived at it that uric acid is excreted almost if not quite exclusively by the epithelium of the convoluted tubules and the ascending branch of Henle's tubule; probably the same rule applies to urea. The experiments show the correctness of Bowman's theory. Further experiments were next undertaken to define the influence of the nervous system on the diuretic action of caffeine. In the dog caffeine does not increase diuresis to the same extent as in the rabbit and other animals This has been supposed by Schroeder and others to be due to the voso-constrictor action of the drug. In the experiments the blood pressure, the respirations, and the amount of urine were simultaneously recorded. They showed that caffeine occasionally exerts a diuretic action on the kidney of the dog, but that it usually does not; that its usual inactivity is due to the tonic influence of the vagus on the kidney which is exaggerated by the caffeine; that this influence is not vaso-constrictor, but directly controls the secretory elments of the organ. Theobromine proved to be diuretic in the same sense as caffeine, but exerted little influence on the vagus, and thereby does not tend to inhibit diuresis through excitation of the nerve. The saline diuretics increase at the same time the flow of urine and the flow of lymph; by measuring these simultaneously, Anten showed that the diuretics of the xanthin class (caffeine, theobromine) are not lymphagogues. The members of this class differ in solubility, but there does not appear to be any proportion existent between the degrees of solubility and the diuretic effect. They act as direct excitants of the renal parenchyma. In contrast with the saline diuretics, which appear chiefly to provoke elimination of water and at the same times of salts, and especially chlorides, the xanthin bodies increase the elimination of nitrogenous elements, and specially urea and uric acid.

A New Compound of Tannin.—Barnes and Hille (*Phila. Med. Journal*, July 20th) present a new method of making tannin available as an intestinal astringent. Incidental to some pharmacological and chemical work upon the nucleo-proteid class of bodies, the writers undertook to produce a tannin compound that would be resistant to digestion and consequently present more astringent tannic acid to the intestines and very gradually evolve free tannin from the compound when the body is acted upon by the alkaline intestinal juices. The investigators found that by the synthesis of nucleinic acid and albumin there results an entirely new body which chemical analysis shows belongs to the nucleo-proteid class. In certain chemical and physical conditions this body enters into combination with tannin and forms a yellowish brown, tasteless powder containing 50% of tannin acid. This tannic nucleo-proteid is insoluble, and does not precipitate albumen, pepsin, or peptones. A number of experiments demonstrate that this tannin nucleo-proteid but very gradually evolves tannin from its combination. The advantage of this gradual elimination of tannin can be readily understood. As the remedy passes downward through the intestines and meets fresh portions of the alkaline juices more and more tannin is gradually released. Thus the astringent is brought into contact with the entire intestinal canal.

The Volatility of Calomel at the Normal Human Bodily Temperature.—Simonelli (*Giornale italiano delle malattie veneree e della pelle*, 1900, No. 6) thoroughly agrees with Soare that the chemically pure calomel form, and in the form of ointments, never volatilizes, and moreover shows mercurial fumes at a temperature of 37°C. The author is still investigating the absorption of calomel through the

normal skin and promises to soon report the results of his investigations on this subject.

The Antagonistic Action Between Cocain and Hypnotics.—G. Gioffredi (*Giorn. internaz. delle scienze med.*, 1900, Fasc. 16) in experimenting upon animals found that there was an undoubted antagonism between hypnotics like chloral hydrate, paraldehyde, etc. and cocain, the antagonism being similar to that one observed by Cervello between paraldehyde and strychnine. The author administered cocain to dogs in double the quantity necessary to kill, and succeeded by the administration of hypnotics to keep the animals alive, while on the other hand the cocain was only of use as an antidote in toxic but non-fatal doses of the hypnotics. The author states that when once the hypnotics have caused complete paralysis of the nervous elements the exciting influence of the cocain can no longer take hold.

Amyl Nitrite as an Antidote to Cocain.—Cordero (*Gazzetu Degli Ospedali* (Milan), June, 16, 1901) advises the use of amyl nitrite to lessen the disturbances occasioned by cocain in spinal anesthesia. The pallor and cold extremities of persons under cocain anesthesia indicate that the drug has powerful vasoconstrictor action. Amyl nitrate has the opposite effect upon the vessels, and for that reason the drug is suggested. Schilling suggested amyl nitrite some time since as an antidote in cocain poisoning, and advises that the patient inhale three or four drops of amyl nitrite after the poison has been ingested, 20 drops of the antidote being the maximum to be employed. Cordero in spinal cord anesthesia injects six to nine mg. of cocain in a warm 0.5% solution for operations below the umbilicus.

Poisoning by Diachylon.—W. Wangham (*The British Medical Journal*, July 13, 1901) reports several cases of acute lead poisoning in women, resulting from the use of pills of diachylon as an abortifacient. In all these cases the effect of the poisoning was manifested chiefly in the nervous system, although gastro-intestinal trouble and abdominal pain were also present. The ocular symptoms were particularly noticeable, no fewer than four of the patients presenting optic neuritis and ocular paralysis. The former condition, when present, is regarded rightly as indicative of danger. Involvement of the ocular muscles seemed to be of much rarer occurrence. The fact which is well brought out in these case reports is the length of the "incubation period" of lead if one may use the term. Although large quantities of the metal were ingested, it was some weeks before serious symptoms appeared. These again persisted or often grew worse after the patient had ceased taking the pills.

DISEASES OF THE GASTRO-INTESTINAL TRACT.

The Medicinal Treatment of Summer Diarrhea.—T. S. Southworth (*Med. News*, July 13, 1901) divides the diarrhea thus: (1) Diarrhea caused by inability to digest unsuitable articles of food; (2) Diarrhea resulting from bacterial action in tainted milk; (3) Cholera infantum, probably also due to milk infection. In the first division the prompt evacuation of the undigested food with proper feeding will generally relieve the symptoms. This condition is not generally due to milk, but it is always well to withdraw the milk for a time. The second division is generally due to milk infection, and depends upon the promptness of its discontinuance and the removal of the residue from the intestines. It is a good rule to stop the milk, including breast milk, in any child under two years of age which begins with vomiting or temperature. In its place can be given dextrinized barley water, rice water, egg albumin water, etc. One of these may be given at the usual feeding hour, not oftener than every two or three hours, if there be no vomiting. If there be vomiting the stomach should rest, and there should be nothing given, as far as possible for twelve hours. The medicinal treatment consists of a dose of castor oil which will carry any undigested food in the bowel away quickly and stop irritation. This is especially useful where there is a good deal of mucus in the stools. For the vomiting small doses of calomel are advised in 1/10 grain doses every half hour or hour until a grain or more has been taken. It acts distinctly as a stomachic sedative as well as an efficient laxative. It also acts as an antiseptic in the bowel and by stimulating the hepatic secretion, brings out the aid of this most important agent in digestion and absorption. Where the patient is not seen at once and intestinal toxemia is marked the treatment should be irrigation of the bowel. If increased peristalsis is present, the use of opium is recommended, although this should not be given if pyrexia is present, until the bowels have been thoroughly cleared. In the severer types in which the stools are frequent, profuse and watery, where the patient is threatened with collapse and gastric absorption in abeyance or prevented by repeated vomiting, the hypodermic use of morphin sulphat, 1/100 grain for a child one year of age, is advised with 1/800 of a grain of atropin sulphate. If there is great loss of fluid, hypodermoclysis should be performed. Care must be taken in returning to the child's usual diet.

Hygienic Treatment of Summer Diarrhea of Infants.—H. C. Hazen (*Med. News*, June 13, 1901) especially recommends the following for infants that are unable ot leave the city during the hot weather. It is a well-known fact that a large majority of the cases are due to the poor milk or food and its preparation. If the child is nursing, the mother's health may demand attention. If bottle-fed, the milk supply should be the best, although this in hot weather is very hard to procure, and it is advised to teach the mother how to sterilize it and how to keep it sterile. Milk in bottles is the best and attention should be paid to the feed bottles and nipples, never allowing anything but one that will fit over the neck of the bottle. Food should be given at regular intervals, and too much water cannot be given. A room must be selected which during some period of the day is exposed to the sum and must be kept perfectly clean and well aired. Very few should be allowed in the room, and it is better for only those that are attending the child to be present. Quietness is very essential. Garbage and refuse should be immediately disposed of, and should not be allowed to collect in hot weather. The child should be placed on a mattress and not on a hot pillow. It should have as little clothing on as possible, and the napkins always changed as soon as soiled. Cool bathing, which is very essential, is often neglected.

After Treatment of Summer Diarrhea of Infants and Children.—W. M. Taylor (*Med. News*, July 13, 1901) says that even after all immediate symptoms have subsided, it becomes a serious question what food shall be used. He considers the most satisfactory pure modified cow's milk, using as a diluent, barley water previously dextrinized by a diastase or maltine. By beginning with a percentage of milk, a food can always be obtained that will agree with the child. It is well-known that every child, when its food is changed, has some digestive disturbance at the first feeding. The great trouble generally is that the percentage is too high. If the above treatment fails, kumyss is next to be tried. At first it is disagreeable to the child, but it soon gets to like it. It is best to start with one part of water and four parts of kumyss. Another important adjunct is beef juice, given three times a day. Dry toast and swieback seem to be the safest and best form of farinaceous food to begin with in children who are accustomed a mixed diet, but at first a liquid diastase should be administered to aid the digestion of starch. It is generally advisable to use some drug to aid the digestion in all the cases. It is often quite beneficial to use inunctions of cod-liver oil twice a day followed by a warm sponge bath. Cases of long standing are often the beginning of a serious malnutrition, anemia, chronic enteric and mucous colitis. The constipation that sometimes occurs during convalescence is best corrected by the diet, water given freely between the feedings, abdominal massage and enemata. Tonics are always contra-indicated in these cases.

Bicycle Riding and Gastric Disorders.—Fürbringer (*Zeitschrift für diätet. u. physikal. Therapie*, Bd. V, Hft. 1) states that gastric disorders seem to have been ignored in literature in as far as employing bicycle riding for their relief, although there are many cases of stomach trouble according to the author which have improved and even been cured by bicycling. These are principally cases of nervous dyspepsia which in addition to the local treatment require recreation. The author states that this form of exercise has been fruitful of marvelous results in cases of nervous anorexia with an almost unconquerable apathy for nourishment and which no medicinal, dietetic or other physical therapeutic means would alleviate. Other indications for this form of therapy are gastric neurasthenia, gastralgia, eructations, nausea and also the "gastric

weakness" combined with an excellent appetite but a feeling of oppression and fulness while eating, and that particularly after the ingestion of certain foods. The efficiency of bicycle riding in these conditions, according to the author is due to the muscular exercise in the fresh air, the production of self reliance and confidence, in short the anti-neurasthenic influence.

The Influence of Spices upon the Functional Activity of the Stomach.—L. R. v. Korczynski (*Wiener med. Presse*, 1901, No. 12) The author found that under the employment of ordinary spices the acidity of the gastric contents decreased and free hydrochloric acid as well. The spices favorably influence the motor function of the stomach.

Sulphur in the Treatment of Dysentery.—G. E. Richmond (*The Lancet*, June 15, 1901) states that it is necessary that the cases should come under treatment early, before much ulceration has taken place, as otherwise the treatment is without results. It has been found that the cases most suitable are in the young with robust constitution. It is first necessary to give ipecacuanha preceded by tincture of opium, which will prevent the obstinate retching, and the 20 grains of sublimed sulphur combined with five grains of Dover's powder to be given every four hours until improvement is noticed.

Dysentery.—S. M. Long (*Monthly Cyclopedia of Practical Medicine*, June, 1901) believes that the only proper way to treat the above condition is to ascertain the different types of the disease. The first thing he advises is bed, giving an ounce of sulphate of magnesium in half a glass of warm water before breakfast, repeating it in the first twenty-four hours, if required. He also advoctaes ipecacuanha. He places the patient in bed, and on an empty stomach gives 15 to 20 drops of tincture of opium; fifteen minutes later an ice-bag is applied to the head, a mustard plaster to the stomach, and an hypodermic injection of morphin (1/4 grain) is given. Not less than 40 grains of ipecacuanha should be given and the patient should remain quiet for at least four hours on his back and should take nothing by the mouth. If saliva increases, it should be spat out, not swallowed. The author's statistics show that 60 to 70 per cent. will be cured by one administration, 10 to 20 per cent. by a second dose, and 20 per cent. will require some other kind of treatment. If bismuth subnitrate is given, it should be in large doses—40 to 60 grains every three hours. Opium in combination with bismuth gives good results when bismuth alone does not act. Enemata, either cold or hot, are quite efficient, although the hot is much more preferable. Nitrate of silver, 20 grains to a pint of water, is by far the best, although quinin is used in amebic cases.

The Treatment of Fresh Cases of Tropical Dysentery.—R. Ruge (*Deutsche Med. Wochenschrift*, 1901, April 4). The experiences of the author have lead him to recommend infusions of ipecacuanha root (4,0:160,0) for fresh cases of tropical dysentery. The strength of the infusion is the strongest that is tolerated without unpleasant phenomena. More than 80 ccm. of this infusion should not be given at one time. Oil of peppermint should be employed as a corrigent. The infusion may be employed to advantage when ice cold. The author has seen no favorable results from the treatment with small doses of calomel.

The Treatment of Ulcero-membranous Stomatitis with Cauterization of Crystalized Chromic Acid.—Von Siredey (*Societe medicale des hôpitaux*, Paris, 1901, July) claims to have observed favorable results with this treatment in cases which would not yield to antiseptic irrigations and the ordinary topical applications. He reports the case of of a man 23 years of age who had experienced considerable difficulty in masticating and deglutition on account of an extensive ulcero-membranous stomatitis, and who recovered soon after being treated with chromic acid. The chromic acid is directly applied with cotton on a wooden probe and the mouth subsequently rinsed with distilled water or some antiseptic solution. The procedure is repeated in twenty-four hours. The author states that he has not found a case which required more than three applications of chromic acid, neither has he observed any complications (nephritis) resulting from this treatment.

DISEASES OF THE HEART.

The Treatment of Diseases of the Heart with Supra Renal Capsule.—S. Floersheim (*New York Medical Journal*, May 18, 1901) has drawn these conclusions: (1) A weak and irregular heart became stronger and more regular. (2) A dilated heart was contracted. (3) A diffused apex beat became localized. (4) A diffused, loud, and rough mitral regurgitant murmur became localized, smoother, and lessened in intensity, while in some cases the murmur disappeared. (5) A murmur which, owing to the extreme weakness of the heart, could scarcely be heard, became more distinct, thus aiding in the diagnosis. (6) The normal cardiac sounds, when indistinct, became clearer and more easily distinguished. (7) In some cases a rapid pulse became less rapid; in other cases a slow pulse became faster. (8) Patients who were very weak, with organic heart disease, were improved. (9) No effect was observed in organic heart disease when the pulse was strong and regular.

DISEASES OF THE LUNGS.

The Practical Choice of Climate in Phthisis.—W. Gordon (*The Lancet*, June 15, 1901) gives the various places to which one who has the above disease can go: (1) Those with early phthisis and some albuminuria had better choose Egypt or the Riviera; (2) Those with advanced phthisis had better let the Riviera alone; (3) Those with recurrent hemorrhage will be safest in a sanatorium. He concludes with the following: In the choice of foreign climates—the climates for the few—we have now some very definite indications much clearer than some people seem to think. In the choice of home climates—the climates for the many—we have no such definite indications, and, indeed, we know much less about them than some of us are willing to admit. Sanatoria, whilst of immense value, do not supersede climates, and the success of our English sanatoria will depend largely on the sites which are chosen for them. Consequently, the author says, that a study of home climates such as should give us the same precision in their selection as we now enjoy in the case of certain foreign climates is a matter of immediate importance. If we are to reap in England the greatest benefit for the greatest number of phthisical patients for whom we are responsible we ought to combine the erection of sanatoria with the selection for them of these localities which seem most promising from a climatic point of view.

The Late Results from Tuberculin TR.—Dr. E. Caillaud *Medecine Moderne*, May 28, 1901, No. 23) reports five cases of phthisis and two cases of tuberculous ostitis, treated with tuberculin TR. Of the five phthisical cases, great improvement followed in one case, with some amelioration in one other. The other three remained unchanged. The two ostitis cases showed immense improvement, abscesses disappearing, and fistulae closing. This improvement has lasted over three years. Caillaud believes that injections of tuberculin TR are often of use in the treatment of tuberculosis, especially of the bones.

Empyema.—J. A. Hartwell (*Med. News*, July 13, 1901) gives the following summary: (1) Children are especially liable to empyema following pneumonia. Unless promptly relieved by drainage of pleura the prognosis is bad. With such relief the prognosis is good; (2) Pneumonia caused empyema in 50% of the cases considered in his article, and such cases were of severe type; (3) Tuberculous family history exerts little influence on empyema; (4) In about one-sixth of the cases the empyema was sacculated; (5) The pneumococcus was found in 50% of the cases where examination was made; the streptococcus in 33 1-3%; the staphylococcus in 8%; the tubercle bacillus in 4% and no bacterium in 16%. The pneumococcus produced the most virulent infection; (6) Chloroform was the anesthetic of preference. Deep narcosis is contra-indicated, owing to the danger of pus being drawn into the other lung from a ruptured bronchus; (7) In adults with general empyema two inches of the seventh and eighth or eighth and ninth ribs in the posterior axillary line should be resected. In children the same length of the seventh rib. Simple incision, with our present knowledge, is rarely advisable; (8) Operation is indicated as soon as diagnosis is made: (9) Irrigation of the abscess cavity with bi-chloride solution, 1-5000, or carbolic acid, 1-1000, is indicated, unless

drainage is perfect and no sepsis present. In children the solution may be weaker; (10) The mortality from empyema proper was 15%. We may hope to reduce it to one-half that number by earlier and more radical treatment.

The Treatment of Coughs in Tuberculous Subjects.—The results obtained in sanatoria (says *British Med. Journal*, July 13, 1901) tend to show the advantages of dealing effectively with cough in cases of pulmonary tubercle. Lalesque of Arcachon records his experiences (*Jour. de Med. et de Chir. Pratiques*, April 25th, 1901). He shows that in very many cases the patients contract a habit of coughing as soon as they have any tickling or irritation of the fauces, larynx, or trachea. Such cough is likely to be spasmodic, irritating, and unaccompanied by expectoration. It differs completely from the expectoration cough which has as its object to get rid of accumulated secretion. A very comomn method of treatment in the former cases is the administration of sedatives. This is a method which the writer condemns in the strongest terms. He shows that it is quite possible to drill the patient into the manner of not giving way to the sensation productive of cough, and with practice he shows that it is quite possible to avoid all such spasmodic attacks which have as their result fatigue, perspiration, cerebral congestion, possibly followed by vomiting. He states that it is as easy with a little practice to avoid coughing as it is to avoid scratching in public. In many cases the patients require encouragement combined with firmness on the part of the medical attendant to enable them to overcome this very injurious habit. The writer also demonstrates that failure may be due to some fault in the directions to the patient. He is not to close his mouth and hold his breath in the hopes that the desire to cough may pass away. Such a result is likely to be followed by a sudden severe cough. The best method is to close the mouth gently, and take three or four quiet deep respiratory movements through the nose. As regards expectoration cough it is also shown that it may be unduly excessive on account of effort on the part of the patient to expectorate mucous material which is as yet undetached. The patient should be instructed to avoid coughing prematurely, and a little practice will soon enable him to recognize when expectoration may be brought about by a single cough. This may prevent a great deal of tiring effort which cannot but prove injurious to the tuberculous patient.

CONSTITUTIONAL DISEASES.

Diabetes Mellitus.—A. Mayer (*Med. News*, June 29, 1901) states that dietetic treatment removes the hyperclycemia and glycosuria. Medicinal treatment is not indicated, except to correct a faulty stomach or sluggish bowels. The drugs which he thinks have a beneficial effect on the passing of sugar are opium, arsenic and bichloride of mercury. He uses opium for its effect on thirst and on the patient's physical and mental condition. The dose should be small, one-half grain three times a day, given an hour or an hour and a half after meals, remembering its constipative effect. In severe cases showing Gerhardt's reaction it should not be used, nor must it be continued for any length of time in any case. Arsenic has not been found very successful in bad cases. In mild cases good results are found, especially in conjunction with diet, or even after a diet and opium treatment. Fowler's solution and the bromid salts are the two best preparations; the latter given in doses of 1/30 to 1/10 grain three times a day in half a glass of water. In persons with excessive adipose tissue the author claims for bichlorid of mercury a specific action on the reduction of sugar and amelioration of symptoms. He advises that mercury should be given off and on every month for ten days, starting with 1/12 grain three times a day and rapidly increasing to 1/6 grain three times a day after meals. Under the head of "Hygienic Treatment," he states that it is most important to get your patient free from worry and anxieties. He must be warmly clad, both in winter and summer, and must keep his skin moist and active by warm baths. Carbonic-acid baths are invigorating, but cold baths and seabathing should be forbidden. Massage is advised if the patient cannot exercise himself, as it is well known that muscular exercise of any kind diminishes the excretion of sugar in nearly all cases. The various waters have very little value, except to correct many a faulty stomach and sluggish bowels, two important factors.

OPHTHALMOLOGY.

The Treatment of Dacryocystitis with Injections of Hydrogen Peroxide.—Morisot (*Gaz. des hôpitaux*, 1901, 50) after probing (up to No. 3, Bowmann) injects equal parts of distilled water and a twelve volume solution of hydrogen peroxide at a temperature of 30°C. He remarks that as soon as a few drops have penetrated the lachrymal sac, pus is evacuated. The latter phenomenon is due to the combination of the oxygen with albuminoid materials, causing a space to be formed which not only cleanses the lachrymal canal, but also causes the pus to be driven upward. In three days the solution should be diluted to two parts of hydrogen peroxide and one part of distilled water. The burning pain in the conjunctiva rapidly disappears.

Vaseline Injections into the Eye Ball Following Enucleation.—Von Rohmer, Nancy, (*La Semaine medicale*, 1901, Nr. 15) has employed injections of fluid vaseline into the subconjunctival connective tissue, as a support for a prothesis. He reports the case of a young man in whom the left eye ball had been eneucleated and into whose conjunctiva the author injected 2½ cm. of vaseline through the conjunctival scar, under cocain anesthesia; after eight days another injection of 1½ cm. was made and forty-eight hours thereafter the artificial eye was inserted. The results were, but slight pain, no swelling or edema and good movement.

The Sometimes Successful Treatment of Cases of Apparently Incurable Blindness.—Charles Bell Taylor in a clinical lecture lecture on "The Sometimes Successful Treatment of Cases of Apparently Incurable Blindness" (*Lancet*, April 27, 1901) calls the attention of the profession to electricity as a therapeutic measure which is of especial use on account of the electrical conductivity of the eyeball. The facility with which a current can be passed through the eyeball along the optic nerve to the brain makes it all the more remarkable why electricity is not employed more frequently. He not only considers electricity of value in cases of ocular and facial palsies, but even considers it a means for restoring power in neuritis and degenerative changes such as accompany and follow attacks of influenza, diphtheria, diabetes, typhus, typhoid, rheumatic and other fevers. He reports a case of blindness caused by optic neuritis in which sight was restored under the employment of a powerful galvanic current. He recommends elaterin in detachment of the retina. He makes a strong plea for venesection.

On the Treatment of Ophthalmia Neonatorum.—Henri Copper (*Jour. med. de Bruxelles*, 1900, No. 35) recommends in the treatment of ophthalmia neonatorum and especially, in that state of the disease when the swelling and suppuration are receding, instead of compresses, the introduction of iodoform and aristol ointment into the conjunctiva. The aristol ointment is to be preferred on account of its being non-poisonous, non-irritating and without the unpleasant odor of iodoform. As a prophylactic measure the author prefers a 20% solution of silver albumose to the 2% silver nitrate solution ordinarily employed.

DISEASES OF THE MOUTH.

Treatment of Simple Gingivitis.—G. T. Carpenter (*Jour. Amer. Med. Assoc.*, July 20, 1901) recommends the correction of all mal-occlusions and restoration of perfect contour to crowns; also the removal of all local irritants and deposits and a slight application of tincture of iodin to affected parts, with instructions to prevent irritation and abuse of gums; change of diet from mashed vegetables of all descriptions or soaked or cooked in milk, to that of dry or Swedish toast, whole wheat or grape-nuts, to be ground thoroughly fine with the teeth, incorporated with the saliva and swallowed. This treatment should be followed, especially with children suffering with gingivitis.

The Treatment of Caries of Temporary Molars.—Martin (*Lyon Med.*, February 3d, 1901) protests against the general tendency to neglect caries of the milk teeth. Continued pain and the disturbance of digestion from lack of mastication at the very time when assimilation is most active lead not only to fretfulness and illness but to actual arrest of development of the children. On the other hand, the temporary teeth are difficult to treat by the conservative methods applicable to the permanent teeth, because of their

lesser resistance, and extraction is not without inconvenience when premature. Martin has treated his recent cases in a new way. After a few days of vigorous disinfection, he applies a closely fitting capsule of gold or platium to cover the whole of the crown. If there has been any marked loss of substance, the cavity is cleaned and then closed by using first a little pulpine (essence of clove, oxide of zinc, calcium carbonate and tannin) and then cement before the application of the capsule. All four molars of the affected jaw should be capped in order to ensure absolute concordance between the dental arches. The results have been very satisfactory, the cachexia and fretfulness disappearing, and nutrition rapidly improving. In one case, where all the molars were in an advanced stage of caries, eight separate capsules were applied, and the child has for two years suffered no return of pain or discomfort.

DISEASES OF WOMEN.

Treatment of Atresia Hymenalis.—O. Thienhaus (*Jour. Amer. Med. Assoc.*, July 20, 1901) emphasized the following: The origin of gynetresias in a simple genital tract may be twofold: (a) caused by an inflammatory process, which is true in the majority of cases; (b) caused by congenital malformation, as shown by Van Tussenbrock, in a case of atresia hymenalis, which, however, can find as above cited, another explanation, and by Landau in a case of atresia cervicalis produced by a mesonephric fibroid; (2) The practitioner must pay attention to every case of birth where he suspects a gonorrheic infection of the maternal genital tract, not only to the eyes of the newborn, but also in the same manner to the vulva and vagina: and, if he finds and infection of these parts, he should treat them carefully with 5% of protargol solution three times a day, as advised by Siebert, or by other methods, (3) In all infectious diseases during childhood possible inflammation of the genital apparatus must be taken into consideration; (4) The physician must enforce a thorough examination in all cases of molimen menstruale with absence of menstrual flow; (5) If he finds an atresia somewhere in the genital tract as the underlying cause, he must not cut blindly into the hematocolpos or hematometra, but must direct his method of treatment after the question: Is there hematosalpinx present or not? (6) If the latter is diagnosed, laparotomy must be performed first and then the hematometra or hematocolpos opened by the vaginal route.

Applications of Steam to the Uterus.—H. Fuchs (*Münch. Med. Woch.*, May 28, 1901) states that at the Gynecological Clinic in Kiel, the application of steam directly to the uterus has almost supplanted hysterectomy for the uncontrollable hemorrhages of the menopause. In the twenty-two cases he reports, several of which have been curetted without any result, steam was applied from 20 to 40 seconds at 115° to 120°C. Under this treatment in six cases the menopause was entirely established by the steaming; in six menstruation again began, but in less quantity; in eight, slight bloody discharges occurred at irregular times.

DISEASES OF THE LIVER.

The Treatment of Mild Forms of Glycosuria.—Hirschfeld (*Therapie der Gegenwart*, 1901, No. 5) believes that definite border lines can as yet not be established between diabetes and alimentary glycosuria. When there is but a slight elimination of sugar the patient should not be told that he is diabetic, as he may then consider himself incurably ill. On the other hand he should be told that there is a slight disturbance of metabolism and his attention called to the differences in the diet of diabetes and the one prescribed for him. It is of importance in the treatment to bring about increased muscular activity and to order "walking" for older individuals, warning them, however, that excessive muscular exercise should be abstained from in order to protect their cardiovascular systems. The general regime of treating these cases should be based upon the etiology of diabetes itself, but in cases of mild glycosuria excessively stringent orders should not be given to the patient. Eggs, milk and cheese can be taken, and meat is not to be increased. The patients should be regularly weighed. Hydrotherapeutic treatment should not be neglected, and the tolerance for carbohydrates should be tested for months after cure.

The Reserve Glycogen in Cirrhosis of the Liver.—In (*La Presse Medicale*, (May 29, 1901, No. 43) Dr. Brault discusses the reserve glycogen in hepatic cirrhosis. He reports three cases of cirrhosis of the liver with complications, in all of which a large quantity of glycogen was found in the liver cells post-mortem, in spite of the sclerosis. Pneumonia, phthisis, and severe gastroenteritis were unable to use up the glycogen of the liver, beside the cirrhosis. Especially do those cells between the sclerotic bands store up the reserve glycogen. It is due to this apparently non-injurious action of the cirrhotic fibers that Brault understands the occurrence of a latent or compensatory stage in cirrhosis; that cirrhosis of the liver can be cured, though an evidently sclerotic liver remains.

SURGERY.

Gastrotomy.—Henry Milliet discusses the indications and the technique of gastrostomy, in the *Journal des Praticiens*, (June 22, 1901). It is indicated both in cancerous and non-cancerous strictures of the esophagus, in the former very early, in the latter when dilatation fails by any other way. He describes the technique of the operation, as it is performed by Routier, in four steps, longitudinal incision into the abdominal wall along the rectus, search for the stomach: fixation of the stomach, in the abdominal wall, and opening of the stomach. A sound is then passed up through the stomach, to the stricture. This is left in place for a week. Dilatation of the stricture follows.

Rachicococainization.—Dr. Theodore Tuffier delivered an address upon this subject before the Société de Chirurgie, May 29, 1901, (*Presse Medicale*, June 8, 1901). After a brief review of the 18 months which have passed since he inaugurated this method of anesthesia in France, he states that the technique of the operation, as practiced by him, has now become general. The analgesia begins in the genitalia; its effect is variable. In a few cases analgesia has not appeared; in the majority, it is constant. Tuffier found that it lasted long enough for all of his operations, and believes it to be both constant and sufficient. During operation the common symptoms of seasickness may occur; after operation, headache is the main trouble. Its only deleterious effect is upon the nervous system, and such symptoms pass away quickly. Death is rarely due to the lumbar injection. Tuffier's mortality is but 2%. He advises the rachicococainization whenever a general anesthetic is contraindicated, especially in operations upon the lower extremities, the male and female genitalia, and the urinary apparatus. Hernia and pulmonary operations can also be done with this anesthetic. While not insisting upon its use in all cases, Tuffier pleads that it be employed where it is especially indicated.

The Treatment of Noma.—R. Schweitzer, in the *Allgemeine Medicinische Central-Zeitung*, (June 5 and 8, 1901), describes seven cases of noma treated by curettement, the application of warm potassium permanganate solution, (0.1%), and iodoform. If all the gangrenous tissue is not removed at once, a moist permanganate dressing is left on until further curetting can be done. The permanganate solution and the iodoform are changed once or twice a day. The children were from two to five years old. Five cases recovered and two died, one with septicemia, the other with pneumonia.

Amputation of the Tongue by the Transhyoid Method.—In the *Journal de Medecine de Bordeaux*, (June 16, 1901), Professor G. Chavannaz reports two cases of amputation of the tongue by the transhyoid method. He operated according to the directions given by Vallas, in five steps: (1) ligation of both lingual arteries with removal of the submaxillary glands, (2) median osteotomy of the hyoid bone, (3) with the mouth open, opening the floor of the mouth, and freeing the attachments of the tongue to the inferior maxilla and the floor of the mouth, (4) luxation of the tongue downward, with separation of the hyoglossi, and (5) reconstruction of the floor of the mouth with sutures. Drainage was left through the floor of the mouth. In the first case, a man of 51, death followed operation for an epithelioma. In the second case, a woman aged 48, while recovery followed the operation, the tumor recurred in two months, and caused her death four months later. Not only is the operation a serious one, but Chavannaz, from his own experience, is not in favor of amputating the tongue by the method of Vallas.

Lumbar Puncture in Uremia.—At a recent meeting of the Medical Society of the Paris Hospitals, (*Bulletins et Memoires de la Societe Medicale des Hôpitaux de Paris*, May 23, 1901. No. 17). Pierre Marie reported a case of uremia in a painter, aged 18, who had had lead colic. He was successfully treated by lumbar puncture, 10 c.c. of the cerebrospinal fluid being withdrawn. Two days later the patient left the hospital in excellent condition. Statistics, however, show that in the majority of cases so treated, no improvement resulted. This treatment has been used in Germany since 1895. Only cases of moderate intensity and recent date seem benefited by lumbar puncture. Babinski and Chantemesse reported cases treated in this manner.

Obstipation.—S. B. Taylor (*Med. News*, June 22, 1901), recommends the treatment of hypertrophy of the rectal valve by palliative measures, such as massage, enemas, etc. or radical. Radical treatment consists in a division of free border of the valve, which is rendered tense by a band of fibrous tissue In some cases operated on by the writer the band offered almost as much resistance to cutting as cartilage would. After division of the free border is made, the incision should be continued down almost to the gut wall, great care being taken not to overreach the safety limit. Sutures should be placed one in angle of wound, one on either side, to avoid hemorrhage and union by granulation. A tampon of surgeon's cotton wool, dusted lightly with Monsel's powder, may or may not be introduced as a further guard against hemorrhage. After-treatment consists of daily lavage and strict attention to diet, allowing only those articles of food that do not produce gas or a solid stool. This operation is one of the most delicate in surgery and should not be undertaken by any one without proper equipment and thorough knowledge of its technique.

The Treatment of Goitre.—Kochu (*The Med. Press*, May 8, 1901) recommends the following procedure in operating on a case of the above condition. All vessels should be ligatured and the isthmus divided before the struma is drawn out. The removal must be effected as rapidly as possible. After the tumor is drawn out, do not hurry with the excision, but work with the greatest care to remove all diseases. For avoidance of suffocation, a canula should be inserted into the trachea. With regard to the non-operative treatment, the author advises the use of iodine, and says that it plays a useful part in spite of the highly praised thyroid treatment. Iodide of potassium must be given with caution, and the thyroid preparations more so. He advises the iodine treatment, but uses six to eight grams of sodium phosphate. Under this treatment the iodine of the struma diminishes, but the phosphorus increases, and this is especially the case in gravid women. By treatment with pure phosphorus the iodine increases in amount, but the phosphorus diminishes. The hyposecretion of the goitre is increased by sodium phosphate and thus diminished in size. Possibly in struma there is disturbance of nutrition of the gland as too little phosphorus is brought to it. For this reason the thyroiden sicca is the most active preparation for struma, as it contains a relatively large amount of phosphorus.

Static Electricity in the Treatment of Sprain.—L. C. Stanford (*Med. News*, July 20, 1901) says: (1) For sprains with little or no effusion, as, for example, sprains of the ankle, the spark affords a very satisfactory means of treatment. There is immediate relief, which lasts from two to four hours. At the end of this time, some reaction follows, depending directly upon the amount of work upon the injured limb. Aside from this immediate relief, there is a marked permanent improvement in the majority of instances. In the ordinary cases of sprained ankle, daily applications of the spark made for five to seven days were sufficient to remove all lameness, and the patient walked with comfort a day or so later, and in many instances played football. Where it was necessary for a man to use his ankle for football, if the joint was somewhat weakened, various means of support were used: (2) In those cases in which the effusion was present to any extent, as, for example, synovitis of the knee, the spark, while for a short time relieving the pain when it existed seemed to have but little effect otherwise. In these cases, however, after the effusion had been removed by other methods, it was a valuable aid in strengthening and stimulating weakened structures. The results obtained by this method of treatment in injuries of long standing are not generally as in acute variety, yet there are certain instances where it may be of great value. Care should be exercised in its administration, as occasionally an unpleasant reaction follows. This occurred twice in the author's experience. In one instance, one hour after the administration of the spark a patient treated for a sprain of wrist suffered a chill and rise of temperature. Constitutional symptoms of some severity supervened and persisted for three days. She was, however, in an unsuitable condition at the time of administration, having been confined but two weeks previously. In a second case the patient with a sprained ankle suffered from a chill and rise of temperature an hour after the administration of electricity. Subsequently, this attack proved to be a typical quotidian malaria, the occurrence of which might have been influenced by the electrical treatment.

DISEASES OF THE NERVOUS SYSTEM.

Work as Treatment for Nervous Patients in Sanatoria.—A. Erlenmeyer (*Berliner Klinische Wochenschrift*, February 11, 1901, No. 6). Open air sanatoria for nervous patients were first established by Otto Mueller, who realized that some patients would be much better off with physical work and exercise. This has always been advised for melancholia, etc. But according to the author, work is not to be thought of for neurasthenia, as such patients need rest. Should, however, psychopathic complications appear, some regular work will be necessary to distract the patient's attention from himself. But the nervous patient must be distinguished from the neurasthenic, for while the latter is really tired out physically, the former only feels tired, and can do more than enough work, should opportunity present. For him, too, at first rest will be necessary. Later exercise and work will do considerable good. Work will also benefit the physical condition in hysteria and epilepsy, but not the illness itself. For chorea, exophthalmic goiter, tetany, paralysis agitans, spinal and cerebral diseases, rest will be necessary.

The Treatment of Epilepsy According to Alimentary Hygiene.—M. de Fleury (*Journ. de med.*, 1900. Mai 10) observed in a number of cases of epilepsy that the attacks became fewer as well as diminished in intensity, or entirely disappeared, when alcohol was strictly abstained from and a dietetic regime adopted, the latter consisting of lighter green vegetables, fish, eggs, milk, or a milk diet combined with vegetables alone. The author places great value upon gastric lavage and the frequent administartion of mild laxatives like euonymin and cascara. In cases in which bromides are poorly tolerated Fleury employs chloral. In addition he also employs massage douches, and other hydrotheraputic procedures.

Flechsig's Opium-Bromide Cure.—(Ziehen's Modification) E. Mayer (*Berliner klinische Woch.*, November 26, 1900, No. 48). The treatment consists of routine administration of opium and the bromides, a very careful diet and cold water treatment. Ziehen emphasizes that the bromides should be given in large doses for about one year. The author believes that the paroxysms are diminished in number and that both bodily and psychic conditions are improved under this treatment.

DISEASES OF THE KIDNEY.

The Treatment of Hemorrhage from the Kidney, Renal Colic and Nephritis.—Klemperer (*Therapie der Gegenwart*, 1901, No. 1) recommends rest in bed, hydrotherapy, and particularly psychical treatment for cases of hemorrhage, in which organic causes can be excluded, and only resorts to operative procedure in advanced anemia. He states that the object of the surgeon is to relieve tension by dividing the tissues and by the evacuation of blood, inspissated secretions and inflammatory products to relieve the pressure upon the cappilaries thus restoring the normal functional activity of circulation and secretion. The profuse hemorrhages and colics in both normal and inflamed kidneys are to be attributed to nervous influences, and furthermore he attributes the good results of such operations to their effect upon the nerves of the kidneys.

Concerning Diet in Albuminuria.—Robin (*Bull. gener. de therap.*, 1900, February 15). After a series of experiments, the author concludes that under an absolute milk diet the albumin becomes less than under any other form of diet,

that the albumin increases when wine instead of milk is given and that under the administration of egg less albumin results than under a meat diet. Sometimes a mixed diet of egg and milk results in less albumin than an absolute milk diet. Among the meats, veal and beef agree better with cases of albuminuria than poultry, fish appearing to increase the elimination of albumin. Among the vegetables that cause the least elimination of albumin, are potatoes, cauliflower and rice. Bread, when added to the diet, rarely increases the albumin.

THE EXANTHEMATA.

The Ichthyol Treatment of Scarlet Fever According to Seibert.—H. Kraus (*Prager med. Wochenschrift*, 1900, No. 52) has employed this method, which consists in rubbing from 30 to 90 grams of a 5 to 10% ichthyol ointment into the whole body every six to twelve hours. In addition to this, strict cleanliness was observed, and the nasopharyngeal region disinfected with 5% ichthyol solution. The author does not seem to favor this treatment, and he specifically states that in three cases no favorable results were obtained, but on the contrary there occurred an intense dermatitis with marked itching and uncommonly profuse desquamation.

GENITO-URINARY DISEASES.

The Treatment of Spermatorrhea with Electricity.—Denis Courtade (*Journ. d. Practic.*, 1900, No. 47b) claims that the electric current yields very good results in spermatorrhea of neurasthenic origin. Spermatorrhea attributable to organic disease of the cerebrospinal system is also favorably influenced by electricity, particularly when the disease causing the spermatorrhea has not progressed very far. Both faradic and galvanic currents are employed. The electricity in the first palce is applied to the genito-spinal centres, then to the seminal vesicles, a small electrode being inserted into the rectum or into the urethra. In many cases static electricity may be applied with advantage.

DISEASES OF THE BLOOD.

The Action of Ozone upon the Blood.—Oudin (*Journal de med. de Paris*, June 9, 1901) reports the results of 12 years of study of the action of ozone in certain diseased conditions. He concludes that it is superior to all other therapeutic agents in its power of increasing the quality of the blood cells. A number of descriptive cases are given in which marked improvement in the amount of hemoglobin, and the number of red corpuscles were observed. The effect upon the oxyhemoglobin is apparent after the first inhalation.

The Treatment of Malaria with Analin Blue.—Ivanhoff (*La medecine moderne*, 1901, Nr. 4) states that although Ehrlich and Guttmann showed that while methylen blue has a particular action on the hematozoa, in that it fixes the plasma of these parasites in the circulation and thus causes their destruction, Laveran on the other hand showed that the blood corpuscles also and even the animals experimented upon, were destroyed. Ivanhoff has studied the action of analine blue upon malaria and believes that this drug belongs to the acid aniline stains while the methylen blue is to be classified among the basic ones. Ivanoff, himself, however, employed blue in malaria three times daily in doses of 10 cg. and increased the dose to 90 cg. daily in three powders. Seven out of fifteen patients who suffered from the tropical type of malaria recovered, while sixteen out of twenty patients with tertian fever recovered. The drug is well tolerated, colors the urine blue, causes no vesical serious annoyance, only a slight burning sensation.

The Pathology and Treatment of Gout.—Stekel (*Wiener med. Woch.*, 1901, No. 8-11) calls attention to the fact that in all gouty individuals there is a decrease in heat production and consequently this is an indication for directing the therapeutic measures toward an increase in heat production The author also employs uric acid solvents and alkaline waters in gout. He advises that metabolism be stimulated in suitable cases by bodily exercise, or by hydrotherapeutic measures. Locally the hot air apparatuses are of value.

Formulae.

GYNECOLOGY AND OBSTETRICS.

Amenorrhea.—From *The Medical World*, July, 1901:

℞

Strychninae sulphatis	gr. ij
Acidi oxalici	gr. ix
Ferri peptonatis	
Maganesii lactat	āā 5 i
Extracti colchici compositi	gr. xxx

M. et Ft. cachets No. LX.
S.: One after each meal.

—H. C. BLOOM.

Pelvic Congestion.—*N. Y. Medical Journal* contains the following, which is reprinted in the July number of *The Monthly Cyclopœdia for Practical Medicine*:

℞

Magnesii sulphatis	ʒ viii 1/2
Ferri sulphatis	
Manganesii sulphatis	āā gr. ʒ ij
Acidi sulphurici diluti	*m* xlv
Aquae distillatae	q. s. ad f ʒ iv

M. S.: A tablespoonful to be taken in a wineglassful of water before breakfast.

Treatment for Leucorrhea.—Lutaud's injection (*Journal de Medicine de Paris*, June 22, 1901) from *New York Med. Jour.*, July 13, 1901:

℞

Potassii chloridi	ʒ iss
Tincturae opii	f ʒ viiss
Liqudae pici	O jj

M. S.: Half a glass full to a quart of hot water for an injection night and morning.

SKIN DISEASES.

Treatment for Sunburn.—From *Merck's Archives*, July, 1901:

℞

Liquoris plumbi subacetatis	*m* viii
Slippery elm bark	3i
Aquae Rosae	fʒiv

Macerate a few minutes and strain.
S.: Apply frequently.

℞

Aquae hydrogenii dioxidi	fʒj
Aquae rosae	fʒiii

M. S.: Apply on lint on going to bed.

℞

Aquae hydrogenii dioxidi	
Glycerini	āā f ʒ i
Hydragyri chloridi	gr. ss
Aquae rosae	f ʒ iv

M. S.: Swab on three to four times a day.

Treatment for Urticaria.—(The *Journal des Praticiens*, June) from *New York Med. Jour.*, July, 1901:

℞

Alcohol	
Sulphuris ether	Each 300 parts
Spiriti chloroformi	
Menthol	1 part

Treatment for Eczema.—G. H. Fox (*Photographic Atlas of Diseases of the Skin*, Part vi) gives among the soothing applications for the above disease the followine formulae:

℞

Zinci oxidi	ʒ ss
Calaminae	℥ iv
Acidi carbolici	f ʒ ss
Glycerini	f ʒ i
Liquoris calcis	ad f ʒ i

M. S.: Shake well before using.

Also a paste:

℞

Acidi salicylici	gr. x
Zinci oxidi	ʒ ii
Pulveris amyli	ʒ ii
Vaselini	ad ʒ i

—Lassar.

Also a paste:

℞

Acidi salicylici	gr. x
Bismuthi subnitratis	ʒ iiss
Amyli maidis	ʒ iss
Unguenti aquae rosae	ad ℥ i

To Remove Freckles.—The following lotion is recommended by the *Pratico del. Med.*:

℞

Hydrargyri chloridi corrosivi	gr. xv
Zinci sulphatis	gr. xxx
Aquae plumbi	f ʒ ss
Aquae rosae	f ℥ viii

M. S.: Apply locally night and morning.

For Bites of Insects, Mosquitoes, Bees, Etc.—From *Merck's Archives*, July, 1901:

℞

Aquae ammonia	f ʒ ii
Eau de Cologne	f ʒ vi

Also:

℞

Ichthyol	ʒ ii
Petrolati	ʒ vi

M. S.: Apply freely.

℞

Ichthyol	ʒ j
Alcohol	f ʒ iiiss
Ether	f ʒ iiiss

M. S.: Apply locally with a brush.

Treatment for Warts.—The *New York Lancet* gives the following for warts:

℞

Hydrargyri chloridi corrosivi	gr. v
Acidi salicylici	ʒ i
Collodion	q. s. ad ℥ i

M S.: Paint the application over the warts once a day. After a few applications the warts peel off.

Alopecia Following Fevers.—The following, taken from *Merck's Archives*, appears in the July number of *The Monthly Cyclopedia for Practical Medicine*:

℞

Olei Ricini	f ℥ ii
Tincturae cinchoninae	
Tincturae rosmarini	
Tincturae jaborandi	ää f ℥ i
Spiritis jamaicenis	f ℥ x

M. S.: To be shaken before being rubbed on.

Acne.—H. A. Hare says if the skin is very atonic, muddy and torpid, it should be bathed night and morning with hot water and castile soap, or even with the tincture of green soap, and well rubbed with a wet towel. After this the following salve may be thoroughly applied:

℞

Sulphur praecipitati	ʒ ss
Lanolin	
Adepis	ää ℥ ss

M. S.: Apply as directed.

To Abort Furuncles.—*Jour. Amer. Med. Assoc.*, June 8, 1901:

℞

Sodii boratis	
Acidi boraci	Of each ʒ j
Acidi salicylici	
Pulveris acidi tannici	

M. S.: Apply the powder sprinkled upon a yeast poultics to the affected part.

Treatment of Tinea.—*Jour. Amer. Med. Assoc.*, June 8, 1901:

℞

Tincturae cantharidis	
Tincturae capsici	ää f ʒ jss
Olei ricini	f ʒ ij
Eau de cologne	q. s. ad f ℥ iij

M. S.: Use as a hair wash.

For Facial Erysipelas.—From *The Medical World*, Juiy, 1901:

℞

Guaiacol cryst	gr. xv
Menthol	gr. xv
Olei camphorate	f ℥ j

M. S.: External use. Apply frequently on absorbent cotton to inflamed area; retain with light bandage.

Pruritis Ani.—*The Monthly Cyclopedia for Practical Medicine* gives these directions: Acetate of potassium, 10 grains *t. i. d.* internally, and a 10% solution of nitrate of silver locally, to be formed by the following ointment.

℞

Menthol	ʒ i
Cerati simplicis	℥ ii
Olei amygdalarum dulcium	f ℥ i
Acidi carbolici	f ʒ i
Pulveris zinci oxidi	ʒ ii

M. S.: Apply morning, noon and night after cleansing the parts.

Ointment for Leg Ulcer.—From *The Medical Standard*, July, 1901:

℞

Acidi carbolici	f ʒ 1/2
Acidi borici	ʒ ii 1/2
Camphori	ʒ ij
Ichthyol	ʒ v
Olei amygdalae	f ʒ ii 1/2
Pineoline	℥ ii

M. S.: Apply night and morning.

DISEASES OF CHILDREN.

Summer Diarrhea of Children.—The following prescriptions are taken from *Merck's Archives*, June, 1901:

℞

Bismuthi subnitratis	
Bismuthi subgallatis	ää gr. xxx
Misturae cretae	f ℥ ij

M. S.: Teaspoonful every three hours.

℞

Tincturae kino	f ʒ ii
Tincturae opii camphoratae	f ʒ iv
Spiritus menthae piperitae	f ʒ j
Misturae cretae	q. s. ad f ℥ iij

M. S.: Teaspoonful every two hours.

Croup.—

℞

Chlorae hydratis	gr. xxv
Potassii bromidi	gr. xiv
Ammonii bromidi	gr. xxx
Aquae cinnamoni	f ℥ ij

M. S.: One teaspoonful. If not relieved, repeat every twenty minutes.

Cardiac Dropsy in Children.—

℞

Potassii iodidi	gr. ij
Tincturae scillae	*m* v
Tincturae strophanthi	*m* v
Spiritus chloroformi	*m* v
Aquae	q. s. ad f ʒ ij

M. S.: For one dose, to be taken three times a day.

Treatment for Nasotonsillar Affections in Scariatina.—Prof. Aviragnet (*Med. Press and Circ.*, uJne, 1901) from *New York Med. Jour.*, July 13, 1901:

℞

Petrolati	℥ j
Acidi boraci	ʒ i
Menthol	gr. v

M. S.: Use as an antiseptic salve.

Also,

℞

Olei olivae	f ℥ j
Resorcin	gr. xx
Essentiae menthae piperitae	gtt. ij

Treatment for Tympanites in Infants.—*Jour. Amer. Med. Assoc.*, June 22, 1901):

℞

Sodii sulphocarbolatis	gr. v
Syrupi aurantii amari	f ʒ iss
Aquae menthae pip	f ʒ vi

M. S.: One small teaspoonful three times a day.

Cholera Infantum.—W. B. Stewart (*International Med. Mag.*, July, 1901) recommends the following prescription in cases where there is obstinate nausea and vomiting:

℞

Hydrargyri chloridi mitis	gr. 1/10
Pulveris ipecacuanhae et opii	gr. 1/10
Bismuthi subgallatis	gr. j

M. et ft. in pulv. No. I.

S.: One every one-half to one hour.

If the above fails try:

℞

Bismuthi subgallatis	gr. xvj
Glyceriti acidi carbolici	gtt. xii
Spiritus chloroformi	f 3 i
Elixir lactopeptin	q. s. ad f 3 ij

M. S.: One teaspoonful every one-half to two hours.

Scrofulosis.—H. A. Hare says in his *Practical Therapeutics* when anemia is present the following is useful:

℞

Syrupi ferri iodidi	f 3 ss vel f 3 ij
Aquae distillatae	q. s. ad f 3 iij

M. S.: Teaspoonful in water three times a day, after meals, to a child of one year.

Rickets.—From H. A. Hare's *Practical Therapeutics*:

℞

Olei morrhuae	f 3 vj
Syrupi calcis lactophosphatis	
Liquor calcis	āā f 3 iij

M. S.: One-half to one teaspoonful two or three times a day. Shake thoroughly.

TUBERCULOSIS

Laryngeal Phthisis.—From *The Medical World*, July, 1901:

As a stimulating inhalation in laryngeal phthisis, Lake commends the following:

℞

Pini sylvestris	m xl
Olei Gaultheriae	m v
Magnesii carbonatis q. s.	
Trituate et adde	
Aquae	q. s. ad f 3 j

One dram is added to water at 140°F., and the stream is inhaled for ten minutes. The patient should not leave the room for half an hour after the inhalation. If a sedative inhalation be indicated, he advises the use of:

℞

Chloroformi	f 3 j
Tincturae benzoini compositae	ad f 3 j

If an insufflation be required, he uses:

℞

Iodoformi	gr. iv
Morphinae acetas	gr. 1/3
Bismuthis subnitratis	gr. ii

Tubercular Laryngitis.—*N. Y. State Jour. of Med.*, April, 1901:

℞

Iodoformi	3 ij
Cocainae hydrochloratis	gr. jss
Morphinae hydrochloratis	gr. ss

M. S.: A small amount to be insufflated by the patient with a bent glass tube, to relieve pain.

Night Sweats of Phthisis.—Sielot's formulae (*Le Progrès Medical*) from the *Monthly Cyclopedia of Practical Medicine*, June, 1901:

℞

Agaricin	gr. viiss
Pulveris ipecacuanhae et opii	3 ii
Powdered marshmallow	
Mucilago acaciae	āā f 3 j

M. et dividi in pill No. C.

M. S.: One or two pills in the evening.

Hemoptysis.—Lemoine (*Med. News*; from *Jour. Amer. Med. Assoc.*, June 8, 1901):

℞

Pulveris sennae	
Sodii sulphatis	āā 3 ss
Aquae bullientis	q. s. ad Oj

He advises for continued small bleeding the following:

℞

Quininae sulphatis	gr. v
Pulveris ergotae	gr. viii

M. et Ft. in capsule No. I.

S.: One capsule every morning.

Obstinate Tubercular Diarrhea.—From *Merck's Archives*:

℞

Ichthoformi	gr. v
Tannalbin	gr. x
Bismuthi subgallatis	gr. x
Codein	gr. 1/4
Olei menthae peperitae	m 1/4

M. et Ft. one powder.

S.: One such powder every two to six hours.

Creasote is given by injection by Grasset in the following proportions:

℞

Tincturae opii	m xlv
Creosoti	f 3 j
Olei olivae	f 3 x

M. S.: A teaspoonful rubbed up to an emulsion with the yolk of one egg and f 3 iii 1/3 of water, morning and evening, by injection.

DIGESTIVE TRACT.

Chronic Diarrhea.—From H. A. Hare's *Practical Therapeutics*:

℞

Argenti nitratis	gr. iv
Extracti hyoscyami	gr. x vel xxx
Extracti opii	gr. ij vel iv

M. et Ft. in pillulae No. xx.

S.: One one hour before a meal.

Dropsy.—From H. A. Hare's *Practical Therapeutics*:

℞

Foliarum pulveris digitalis	gr. xx
Pulveris scillae	gr. xx

M. et Ft. in pillulae No. xx.

S.: One every five hours.

Gastric Ulcer.—The following is recommended in H. A. Hare's *Practical Therapeutics* for the pain and for the ulcer itself:

℞

Argenti nirtatis	gr. iv
Extracti hyoscyami	gr. x vel xx

M. et Ft. in pill No. xx.

S.: One pillulae half to one hour before meals.

Stomatitis.—From H. A. Hare's *Practical Therapeutics*:

℞

Potassii chloratis	3 j
Tincturae myrrhae	gtt. xx
Elixir calisayae	f 3 iij

M. S.: Teaspoonful in water every four hours.

Acid Tonic.—*The Monthly Cyclopedia for Practical Medicine* publishes from the *Medical News* the folowing which was used frequently by the late William Pepper under the name of Liquor Acidi Phosphorici Compound:

℞

Calcii phosphatis	gr. xxiv
Potassii phosphatis	gr. ii
Magnesii phosphatis	gr. iv
Ferri phosphatis	gr. iv
Syrupi phosphorici acidi	m c
Aquae	q. s. ad f 3 i

M. S.: One drachm three times daily after meals for an adult.

Treatment for Hiccough.—From H. A. Hare's *Practical Therapeutics*:

℞

Sodii bicarbonas	3 j
Tincturae nucis vomicae	f 3 j
Tincturae cardamoni	q. s. ad f 3 iii

M. S.: Teaspoonful before meals.

Heart Failure in Typhoid Fever.—From *The N. Y. State Journal of Medicine*:

℞

Spiritus ammoniae aromatici	f 3 iv
Tincturae digitalis	f 3 ii
Elixir simplicis	f 3 iv
Aquae distillatae	q. s. ad f 3 iii

M. S.: Shake. One teaspoonful every three hours.

For Flatulent Dyspepsia.—From *Mississippi Medical Record*, July, 1901:

℞

Sodii bicarbonas	
Sacchari	āā 3 ii
Spiritus ammoniae aromatici	m xl
Aquae menthae piperaitae	ad f 3 viii

The above formula is known as soda mint, and is a very pleasant antacid combination.

S.: A tablespoonful after meals.

—FARQUHARSON.

It admits of the addition of tinct. nux vomica or syrup of rhubarb.

MISCELLANEOUS.

Tonsillitis.—From H. A. Hare's *Practical Therapeutics*:

℞

Tincturae aconiti	*m* xij vel xxiv
Spiritus ætheris nitrosi	f ʒ j
Liquor potassii citratis	q. s. ad f ʒ iij

M. S.: Dessertspoonful every three hours.

Suppurative Otitis Media.—N. G. Ward (*Amer. Med.*, June 15, 1901) recommends the use of the following:

℞

Formalin	gtt. v
Alcohol (95%)	f ʒ ij
Aquae	q. s. ad f ʒ j

M. S.: To be droped into the ear.

Treatment for Cholera Morbus.—From H. A. Hare's *Practical Therapeutics*:

℞

Acidi sulphurici aromatici	f ʒ ij
Extracti hematoxyli	f ʒ ij
Spiriti chloroformi	f ʒ ss
Syrupi zingiberi	q. s. ad f ʒ iij

M. S.: Teaspoonful every four hours.

Acute Cystitis.—From H. A. Hare's *Practical Therapeutics*:

℞

Tincturae aconiti	f ʒ j
Spiritus ætheris nitrosi	f ʒ j
Liquor potassii citratis	q. s. ad f ʒ vj

M. S.: Dessertspoonful every four hours until all fever ceases and the pulse is quiet.

Chronic Bronchitis.—From *Mississippi Medical Record*, July, 1901:

℞

Ammonii chloridi	ʒ ii
Mistura glycyrrhizae compositi	f ʒ iii

M. S.: A desertspoonful three times daily.

—DA COSTA.

Rheumatism.—From J. C. Wlison's *Textbook of Applica Therapeutics*:

℞

Tincturae opii	f ʒ j
Potassii carbonatis	ʒ ss
Glycerini	f ʒ ij
Aquae	f ʒ ix

M. S.: To be applied to the inflamed joints on warm lint.

Treatment for Rheumatism.—Martin (*St. Louis Med. Era*, May, 1901) from the *Internat. Med. Clinic*, July, 1901:

℞

Bromidi potassii	
Iodidi potassii	
Chloral hydratis	āā ʒ ij to ʒ iij
Glycerini	f ʒ ij
Syrupi sarsaparillae	f ʒ ij
Olei gaultheriae	f ʒ ij
Aquae	f ʒ iv

M. S.: Tablespoonful four times a day after meals and at bed time.

Treatment for Insomnia.—From H. A. Hare's *Practical Therapeutics*:

℞

Syrupi chloralis	f ʒ iii
Syrupi	f ʒ iv
Aquae cinnamoni	q. s. ad f ʒ iii

M. S.: Dessertspoonful at night.

Treatment for Neuralgia.—From H. A. Hare's *Practical Therapeutics*:

℞

Antipyrin	ʒ j vel ʒ ij
Caffeinae citratis	gr. xx

M. et Ft. in Chart No. X.

S.: One every thirty minutes until relieved.

In Mercurial Salivation.—From *Mississippi Medical Record*, July, 1901:

℞

Acidi tannici	ʒ i
Mel. rosae	ʒ ii
Aquae	f ʒ vi

M. S.: As a gargle.

—BARTHOLOW.

Gout.—J. C. Wilson gives the following in his *Textbook of Applied Therapeutics* as recommended by Lauder Brinton:

℞

Vini colchici	f ʒ ss
Magnesii carbonatis	ʒ j
Magnesii sulphatis	ʒ ss
Aquae menthae piperitae	q. s. ad f ʒ vj

M. S.: A teaspoonful to be taken every four hours while the pain is troublesome.

Treatment for Gout.—S. S. Cohen (*Jour. Amer. Med. Assoc.*, July 6, 1901) recommends for painful finger joints due to chronic gout:

℞

Olei gaultheriae	
Guaiaci	āā *m* xx
Camphorae	
Menthol	āā *m* xv
Olei caryophylli	*m* v
Glycerini	
Petrolati	
Lani	āā ʒ i

M. S.: Apply locally and rub it thoroughly.

For Earache.—From *Mississippi Medical Record*, July, 1901:

℞

Chloral camphoratae	gr. v
Glycerini	gr. xxx
Olei amygdalae	gr. x

M. S.: Apply a little on absorbent cotton and place in ear.

—*Journ. de Medecine.*

Angina Pectoris.—H. A. Hare recommends in his *Practical Therapeutics* the following to be taken between attacks:

℞

Tincturae digitalis	
Tincturae strophanthi	āā *m*-xlviij
Nitroglycerini (1%)	*m* xxiv
Tincturae cardomomi	q. s. ad f ʒ iij

M. S.: Teaspoonful three times a day.

Sea-Sickness.—Martindale & Westcott (*Extra Pharmacopoeia*, 1901):

℞

Amyli nitratis	2
Alcohol (90%)	16
Pulveris tragacanthi	1
Aquae	q. s. ad 240

M. S.: One to two teaspoonfuls.

Asthma.—Eshner (*Jour. Amer. Med. Assoc.*, June 8, 1901):

℞

Hyoscinae hydrobromati	gr. 1/6
Strychninae sulphatis	gr. 3/4
Morphinae sulphatis	gr. vi
Sodii bromidi	ʒ vi
Liquoris potassii arsenitis	f ʒ ij
Tincturae digitalis	f ʒ iv
Infusi gentinae	q. s. ad f ʒ vi

M. S.: Two teaspoonfuls every three hours in water.

Diuretic in Cardiac Dropsy.—From *Mississippi Medical Record*, July, 1901:

℞

Infusi digitalis	f ʒ iiiss
Aceti scillae	f ʒ ss

M. S.: A tablespoonful two or three times daily.

—BARTHOLOW.

For Swollen, Tender or Sweating Feet.—From H. A. Hare's *Practical Therapeutics*:

℞

Pulveris acidi salicylici	gr. xx
Pulveris acidi borici	ʒ ij
Pulveris amyli	q. s. ad ʒ j

M. S.: To be dusted over the feet night and morning, after washing and thoroughly drying them.

Earache.—From H. A. Hare's *Practical Therapeutics*:

℞

Acidi borici	gr. x
Sodii chloridi	gr. xij
Sodii boratis	gr. x
Aquae rosae	q. s. ad f ʒ iij

M. S.: Use as a spray.

Book Notices.

The International Medical Annual.—A Year Book of Treatment and Practitioner's Index. E. B. Treat & Co. New York. 1901. Price, $3.00

This treatise has been published for the last nineteen years. It contains this year quite a number of new features. In the department of Therapeutics is added an article on Toxins and Antitoxins by Prof. McFarland,of Phila delphia, and Dr.William Murrell. The latter also contributed an article on Light and Heat. An article on Tuberculosis by Prof. Ruata, of Perugia, Italy, will be found to be of great practical value. Special articles on X-Ray Work in Medicine and Surgery have been written by Dr. Macintyre, of Glasgow; on Color-Blindness by Dr. Edridge-Green; on Dental and Oral Surgery by Mr. Turner, F. R. C. S. The addition of these articles enlarges the usefulness of the volume and should make it an increased help to the busy practitioner, for whom it is especially intended. [T. M. T.]

Consumption, Pneumonia and Their Allies.—By Thomas J. Mays, A. M., M. D. 8vp., 539 pages. E. B. Treat & Co., New York. 1901.

The work is one of especial interest to the Phthisiologist as giving much information upon the etiology of consumption as viewed from the author's well known stand point of an almost exclusive nervous origin. In the preface the following statement explains the chief purpose of the book:

The fundamental concepts of the work may be formulated into the following propositions:

1. That pulmonary phthisis in the large majority of cases is primarily a neurosis, and that the pulmonary disintegration is secondary; 2. That any agent, influence or condition which undermines the integrity of the nervous system will engender pulmonary phthisis, or some other form of pulmonary disorder; 3. That the only remedies of value in the treatment of pulmonary phthisis are those which apeal to, and act through, the nervous system; 4. That of special value in the treatment of phthisis is the counter-irritant action of silver-nitrate introduced hypodemically over the vagi in the neck; and 5. That acute pneumonia, and other forms of acute pulmonary disease, are closely affiliated with disorder of the nervous system.

The book consists of 525 pages, 391 being devoted to a discussion of pulmonary consumption, and the remainder to pneumgonia, bronchitis, asthma and pleurisy. Of the 391 pages on consumption, the subject of its etiology occupies 206 pages. The opening chapter upon the physical diagnosis is lucid and comprehensive. In the etiological portion, abstracts are given, from various clinicians, in all of which the presence of destructive lung changes is noted in conjunction with grave nerve lesions. In most cases the lung disease was shown to be tuberculous. In some few, however, it was not. The author writes:

"The conditions and influences which produce pulmonary consumption may be divided into three classes: (1) Those which vitiate the nervous system in general, and the pulmonary nerve supply in particular: (2) those which irritate the lungs directly through the inhalation of dusty air; and (3) those which act through infection."

In the resumé and comments upon the evdence presented in these 211 cases, Dr. Mays writes:

"At the outset it may be said that the histories of the first fifty-six cases related in the preceding pages illustrate that injury or disease of, or pressure on the vagi, is followed by pulmonary consumption. The next twenty-two cases show that poisoning of the nervous system, and especially of the vagi by alcohol and syphilis leads to pulmonary consumption. In the next place it is shown that mercury and lead have a similar toxic action on the nervous system and likewise exert a special proneness toward the genesis of pulmonary phthisis. Then, in the order in which they are named, come the toxines of typhoid fever, diphtheria, measles, whooping cough, mumps, influenza, cerebrospinal meningitis and beriberi, which have the power of disintegrating the nervous system, and very frequently are followed by phthisis and other forms of lung disease. Diabetes and leprosy, two diseases in which the nervous system is always implicated (especially in the case of the latter) are often associated with consumption. Then, lastly, it was demonstrated that multiple neuritis, locomotor ataxia, bulbar paralysis, epilepsy, hysteria, idiocy, mutism, asthma and insanity display a strong predilection toward the genesis of pulmonary consumption.

Then again, it was found that those influences that predispose to pulmonary consumption most powerfully did so principally by determining the integrity of the nervous system. Among these is heredity, direct and indirect; direct when the disease is transmitted from a consumptive parentage, and indirect when insanity, epilepsy, hysteria, asthma, alcoholism, syphilis, mercurialism or any other form of intoxication of the nervous system are transformed into pulmonary consumption in the offspring. Indirect heredity is one of the most important factors in the propagation of phthisis, and undoubtedly accounts for many cases of this disease that are ascribed to other than to nervous causes. Indeed the term itself is so bound up with the neurotic origin or consumption that it becomes a superfluity when used in any other sense. Be sides the above-named predisposing causes which act, perhaps, wholly by virtue of a weakened resistance in the nervous system, there are a certain order of birth, prolonged grief, prison discipline and civilization which dispose to a similar downward trend.

In addition to these, and which are really more of the nature of exciting than of predisposing causes, are the inhalation of dust and the entrance of foreign bodies into the bronchi. By acting as local irritants they form in flammatory foci preparatory to the lighting up of the phthisical process.

The next and last point in this connection is the part which infection plays in the maintenance of phthisis. The facts in regard to tubercle inoculation, feeding, inhalation and exposure have been impartially collected, and they certainly demonstrate that when tubercle is experimentally inoculated, fed or inhaled, tuberculosis follows as a consequence in many instances, but clinical experience does not indicate that when exposed to the contagion of consumption in the ordinary ways of life, man if liable to contract the disease to any extent. In fact the evidence which has been adduced seems to prove conclusively that the possibility for acquiring consumption through contagion is extremely small."

In the Therapeutical portion under the head of tonics and stimulants, strychnine is commended as the best, and its method of demonstration is carefully detailed; the plan being to commence with 1/32 of a grain three times a day and push the drug to its physiological effect, even as high as 1/6. Cayenne pepper is especially commended as a diffusible stimulant.

Believing in the neurotic theory of the pathogenesis of pulmonary consumption, Dr. Mays recommends the direct stimulant of the trunk of the vagus. He has therefore experimented by injecting immediately over the course of the pneumo-gastric nerves in the neck 5 mm. of a 5% solution of nitrate of silver. Forty cases so treated are detailed. One-half of these were still at work a year and a half after treatment was suspended. Of these forty cases seven were incipient, eighteen advanced and fifteen far advanced.

This work is a safe guide in the ordinary travelled roads in the treatment of phthisis. Whether the special nitrate of silver treatment is advisable is still sub-judice. With respect to the neurotic origin of phthisis the author pushes his argument so far that it may be said that in the same sense, all diseases have a neuroic orign.

However, in the immediate preceding history of cases of phthisis, the reviewer believes that nervous diseases and nervous exhaustion are much more often pre-disposing causes than is generally recognized, and while Dr. Mays' protest is extreme, it is nevertheless a timely one aganst the tendency to attach too much importance to the bacillus and his works, and too little to the soil upon which he operates. There is no question that the author is right in believing that rational therapeutics must be founded on a correct etiology, and therefore we welcome his praiseworthy and interesting contributions to the study, at the same time regretting that we cannot follow him to his extreme conclusion. [S. E. S.]

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Dosage and Mode of Administration of Strychnine.—At a conference in which the writer shared recently, a question arose as to the duration of the impression produced by a sufficient dose of strychnine given hypodermically. It had been observed that the immediate effect of the injection was to increase the force of the pulse and that this effect continued for something less than two hours. One of the physicians present referred to an experience of the late Sir Thomas Watson, narrated in his classical lectures on the Principles and Practice of Physic, in which Dr. Watson says: "Some time ago I had occasion to prescribe strychnia for two patients in the Middlesex Hospital, both of whom had paraplegia. I directed one grain to be intimately mixed with crumb of bread, so that it might be divided into twelve pills; and one of these pills, or one-twelfth of a grain of strychnia, was to be taken by each patient every six hours. Unluckily, through mistake or negligence of the person who was at that time the dispenser, a grain of the poison was administered at once to each patient. At half-past seven it began to produce its characteristic effect upon one of the patients. He was suddenly seized with tetanic spasms; his legs were separated widely from each other, and rigidly extended; and his head and trunk bent backwards. He was, in fact, in a state of opisthotonos. His abdomen was quite hard, and his limbs were stiff, even when the violence of the paroxysms abated. He cried out with the pain at the coming of these spasms. Any attempt at movement, even the touching him by another person, brought them on. Afterwards, from half-past eight o'clock to between 11 and 12, he had several slighter and shorter fits. He was left weak and exhausted by them; but he soon recovered." Also of the other patient, Sir Thomas writes: "He told me that he had been for a short period very dizzy, and had trembled all over; and at the time when I saw him, he had a weight or uneasy sensation at the nape of his neck, which drew his head backwards; and he experienced some difficulty in opening his mouth, and in articulating his words. But he thought these symptoms were diminishing rather than increasing. He was perspiring profusely. It is stated by Dr. Christison that if the spasms do not come on within two hours after the poison was swallowed, the patient is safe. It was more than two hours since this patient had taken the strychnia."

The important practical bearing of these facts led the writer to think it worth while to refer to them in this manner, since a valuable conclusion seemed deducible. It is least important for our present purpose to call attention to these two cases of recovery, one after symptoms of considerable severity, and the other after mild symptoms; but it is often a great comfort to be able to recall cases of recovery after large doses when one fears he may have given an overdose. Our chief object, however, is to call attention to what appears to be the proper rule of administration of strychnine in cases of grave acute asthenia, where one desires to sustain the strength of the patient until a serious emergency is tided over. It would seem from experience in the case of our patient, confirmed by Watson's experience, that the administration of sufficient doses should be as frequent as once in two hours, since, if the interval is longer, the effect of one dose wears off before that of another is added. Of course, the dose itself must depend upon circumstances, including especially the age of the patient. In the instance which suggested this article, the patient was a boy of 14, suffering with typhoid fever complicated by hemorrhage. One-fiftieth of a grain was the amount administered hypodermically, subsequently increased to one-fortieth. Direction should be given to omit a dose should well-determined signs of toxic effect appear. Experience amply justifies the conclusion that by far the most efficient way to give strychnia under these conditions is by hypodermic injections.

The Treatment of Tuberculosis with Urea and a Meat Diet.—Stripped of its experimental foliage, the therapy of tuberculosis itself remains quite barren, although progress has been made in constructive treatment. The observations of Henry Harper (*Lancet*, March 9, 1901, page 694) indicate that a rich meat diet yields marvelous results in tuberculosis. It is a well-established fact that the negro, although he to a great extent lives in the open air, nevertheless is most subject to tuberculosis. This may be looked

for in the character of the food he ingests which is to a great extent devoid of meat. It has also been observed that the proneness of certain individuals to contract tuberculosis bears some definite relationship to the character of the food they consume. From the nature of the results obtained by Harper, the administration of urea in tuberculosis seems to be justified, and in addition to this a liberal meat diet. The matter has not yet passed the experimental circuit requisite for its scientific establishment in the therapy of this disease, although cultures of the tubercle bacillus to which urea had been added showed that urea inhibited the growth of the tubercle bacillus. In one of Harper's cases a scruple of urea was administered three times daily to a tuberculous woman of 20 years and three months thereafter no more bacilli were found in her sputum. More explicit directions as to the mode of administration of urea and beef will be found under "**Abstracts,**" in current number.

The Prophylaxis of Ophthalmia Neonatorum.—It is now twenty-two years since Neisser first identified the gonococcus as the cause of gonorrheal urethritis, and but two years less since Habb, Hirschberg, Sattler and Krause showed that the same microorganism was present in the pus of ophthalmia neonatorum. Since these discoveries remarkable strides have been made in the prevention of diseases and especially of those propagated by contact. Legislative Assemblies unacquainted with scientific medicine have protected communities by the enactment of laws compelling a stricken individual to remain isolated until the transmission of his disease to his fellowmen is no longer possible. Yet since Credé has shown to what extent blindness may be prevented in the newborn by the prophylactic instillation of a 2% solution of silver nitrate, deplorably little has been done in the United States by way of legislation and the enforcement of the same for the protection of the newborn in this respect. The subject has been agitated and reagitated in the medical profession, notably by Dr. Lucien Howe, of Buffalo, N. Y., whose worthy efforts in this regard were quoted in the **Philadelphia Medical Journal** of May 4, 1901. In Germany, where midwives conduct 95% of births, the following, according to Neuburger (*Wochenschrift für Therapie und Hygiene des Auges*, December 20, 1900, abstracted in the *Ophthalmic Record*, May, 1901) has, at any rate, been accomplished for some time in Prussia and recently also in Bavaria, namely: 1. Among the various effects which a midwife is obliged to carry to all cases of confinement there has been added a small blue bottle with a 2 per cent. solution of nitrate of silver. 2. Immediately after cutting the cord, the margins of the lids and the surrounding parts are to be carefully cleansed with clean cotton and boiled clean water. In all cases in which the mother has suffered from a purulent vaginal discharge immediately after cleansing the eyes a drop of the silver solution is to be instilled into each.

The establishment of laws compelling the prophylactic instillation of silver nitrate in all suspicious cases and the reporting by midwives of all cases in which discharges from the eyes of the newborn exist, would also ensure no small saving, because it would reduce the number of the blind that become the charges of institutions. Here is an opportunity for the efficiently reorganized American Medical Association to perform a *coup de maitre.*

The Solvent Action of Alkalies and the Newer Remedies on Uratic Deposits.—Were we to sum up in a few words our knowledge of gout, we should say that its etiology is unsettled, its pathology obscure, and its treatment empirical. It used to be the current belief that the rich man enjoys a monopoly of this affection; now we know that the poor man is not exempt, although he cannot be accused of overindulgence in eating or drinking. Haig's life-long work is gradually crumbling down under the weight of recent investigation which proves that uric acid is non-toxic and has little to do with the formation of urea; it is one of the oxidation products of the nucleins and *per se* cannot be held responsible for the various symptoms which go to make up the so-called uric acid diathesis. The treatment of gout has been based on the assumption that it is the free uric acid circulating in the blood that should be combated, and since uric acid is readily soluble in alkaline solutions, alkalies have been and still are recommended as the remedies *par excellence.* Neither does clinical experience sustain the claims of the adherents of the uric acid theory, while laboratory experiments actually contradict them. Most of the newer remedies recommended as solvents or eliminants seem equally inefficient, and the treatment of gout resolves itself into the correction of faulty metabolism which is probably the etiologic factor in this disease.

There is, however, a condition which, although only one of the manifestations of gout, is, nevertheless, of itself potent of evil, producing a train of morbid symptoms. This is the formation of uratic deposits and calculi. To prevent the formation of these concretions or to dissolve them when already formed is an important object of treatment. Here, again, we find some of the most vaunted remedies singularly inefficient. A few months ago Dr. V. V. Rubtsoff published a preliminary report of his ex-

periments on the solvent action of alkalies and the newer remedies on uric acid (*Bolnitschnaya Gazeta Botkina*, Vol. XI., Nos. 36, 38, 39). He took advantage of the observation made by Ebstein that when chromate of potash is injected into birds a deposit of uric acid takes place in the serous and synovial membranes and the kidneys. He found that the deposit occurs only when the birds die as a result of the poisoning and not when they are killed after the injection. Injections of 0.005 *pro die* into pigeons produced an abundant deposit of uric acid, killing the birds within three days. A number of the pigeons thus treated received simultaneously the following substances: 1st. *Sodium chlorid* (eight experiments). In all these the deposit of uric acid was as great as in the control birds which received the chromate of potash alone. 2nd. *Sodium carbonate and bicarbonate* (ten experiments). The pigeons died in 3-4 days. A rich deposit of uric acid was found within the serous and synovial membranes and in the kidneys. 3rd. *Lithium carbonate* (19 experiments). A greater deposit than in the control birds was found. Injections of the lithium carbonate alone produced acute gastro-enteritis, acute hepatitis and acute parenchymatous nephritis, showing that this salt is by no means harmless. 4th. *Piperazin* (39 experiments) The deposit of uric acid on the serous and synovial membranes did not occur, but a large deposit was found in the kidneys. Injections of piperazin alone produced a considerable hyperemia of the intestinal tract and liver and acute nephritis. 5th. *Lysidin* (13 experiments). No deposit was found on the serous and synovial membranes; the number of crystals in the kidneys was less than in the control birds. Injections of the salt alone produced parenchymatous nephritis. 6th. *Urotropin* (22 experiments). The deposit of uric acid was not prevented, 7th. *Uricedin* (12 experiments). A rich deposit found on the serous membranes in the joints and kidneys. 8th. *Acidum chinicum* (ten experiments). The deposit was similar to that in the control birds. It would appear, therefore, that sodium carbonate and bicarbonate, lithium carbonate, uricedin, urotropin and chinic acid are worthless as uric acid solvents. Piperazin has a better effect, while lysidin is probably the best, inasmuch as it not only prevents the deposit of uric acid on the serous membranes and in the joints, but seems to dissolve the acid in the kidneys. Clinical observations, however, will be necessary to establish the therapeutic virtues of this drug.

Anesthesia.—Since the introduction of general (inhalation) anesthetics, and more especially within the last few decades, much careful experimental as well as practical study and repeated discussions have been given the indications, contra-indications, dangers, and the respective merits of ether and chloroform. Cushny has averaged the fatality from ether as probably about one in from 10,000 to 12,000, while that from chloroform as about one in 3,000. It is safe to conclude that the dangers of inhalation-anesthetics have been underestimated, and that deaths were often attributed to operations and associated conditions, when the anesthetic was responsible. The careless methods of administration of ether and chloroform, which are largely responsible for the fatalities, are to a great extent the outcome of the almost complete neglect of the teaching of anesthetics in our medical colleges of to-day. It is to be hoped that the time is not far distant when this subject will receive the consideration which it deserves, and be placed in the curriculum in all schools of medicine.

The effect of ether upon the blood has been a question under discussion for many years. Some writers claim that ether does not have a deleterious effect upon the blood, while others maintain that it acts as a hemolytic substance. Sansom, Mikulicz, Buxton, Fish, DaCosta and Kalteyer sustain the view that it has a destructive influence upon the red blood cells, while McQuillen, Oliver, and Von Leber hold an opposite opinion. We particularly wish to direct attention to the recent investigations of DaCosta and Kalteyer, on "The Blood Changes induced by the administration of Ether as an Anesthetic."* These observers examined the blood before and after anesthesia in 50 cases. They emphasize that too much stress cannot be placed upon the conditions accompanying and associated with the anesthetic state which induce blood concentration. This factor (blood concentration) was determined by carefully observing the intake and output of fluids of the body, and by comparing these clinical data with the blood examinations. In many cases the number of erythrocytes increased after anesthesia, and in some of these there was also an increase in the percentage of hemoglobin. The rise in the percentage of red blood cells and of hemoglobin was not parallel. The percentage of corpuscles increased to a greater extent than the percentage of hemoglobin, consequently the average hemoglobin value of the individual corpuscle fell. From their observations they have deduced a number of important conclusions: (1) As a rule, the number of red blood corpuscles is increased, rarely decreased; (2) The nature of this polycythemia seems dependent upon a lessening of the watery constituents of the plasma—blood concentration; (3) the preparatory operative treatment, the anesthetic state, and the post-operative stage are each capable of inducing blood inspissation; (4) at the termination of the anesthetic stage the concentration is

*Read before the American Surgical Association, May, 1901.

most marked; (5) there is always an absolute reduction of hemoglobin, although there may be an apparent rise in the percentage. The decrease in the hemoglobin value of the red blood cell, they claim, is the most striking evidence that ether acts as a hemolytic substance. The newly formed red blood cells, which are regenerated more rapidly than normally are deficient in hemoglobin, and responsible for the average fall in the color index. On account of the many modifying factors associated with and accompanying operations, they were unable to determine the exact influences produced upon the blood by hemorrhage, duration of the anesthetic period, and from the amount of ether.

They have deduced also a number of practical conclusions in regard to operations when a low percentage of hemoglobin is present. They believe that a hemoglobin percentage below 50 is a dangerous level, and if the hemoglobin is below 40% a general anesthetic should not be given except under the stress of absolute necessity. They also emphasize that the blood should be examined before preparatory measures of treatment have been instituted, and if, under such circumstances, a low hemoglobin percentage is found, the ordinary preparatory measures should be modified so as not to cause an undue drain upon the blood. We are of the opinion that these observers have clearly demonstrated that ether has a destructive influence upon the blood, and this must therefore be regarded as a constant element of danger.

The controversy as to the dangers of ether and chloroform as general anesthetics is largely responsible for the present discussion on the indications of local anesthetics. Many competent observers, Schleich may be mentioned among them, claim that 90% of the operations in a general surgical practice could be performed with local anesthesia. Matas informs us that he has been able to reduce the indications for general anesthesia 50 or 60%. This author says: "Now I would contend that the time has come when local anesthesia, in the broadest sense, deserves a higher place in the esteem of general surgeons than has been accorded to it." With many others we believe that the knowledge pertaining to general and local anesthesia is sufficiently extensive to warrant the teachings of practical anesthetics in the medical curriculum.

Unguentum Crede in Therapeutics—The soluble salts of silver form the latest important accession to our therapeutic armamentarium. The representatives of this group of antiseptics are: Argentamin, containing 6.3% of silver, argonin (4.2%), protargol (8.3%), largin (11.1%), ichthargan (30%) and the preparations of Credé. Of the latter actol (lactate of silver) and itrol (citrate) are no longer used, owing to the local and systemic disturbances produced by these salts and their precipitation in the form of albuminates when in contact with the tissues, thus preventing their penetrability. These objections were removed by Credé by the introduction of his collargol or argentum colloidale. In the form of an ointment (unguentum colloidale Credé) this salt has been employed in various suppurative processes, local as well as general, with a phenomenal success in a large number of cases, so that now it bears the endorsement of eminent clinicians and gynecologists. Schlossmann (*Therapeutische Monatshefte*, 1899, S. 278) found by experiments on animals that this salt is not in the least poisonous, no matter by which channels it is introduced. 1% solution taken in milk or on sugar is borne well by children, producing no irritation of the healthy or inflamed mucous membrane. The germicidal action of collargol is, according to Schlossmann far superior to that of bichloride of mercury. It acts destructively on the pus-forming cocci, the diphtheria bacilli and the colon group. One half to one part of 1% solution added to 10 parts of agar prevents the growth of bacteria. The author tried unguentum Credé in children, in 18 cases of phlegmons, pemphigus of the new born, enlargement of the glands in scarlet fever, diphtheria and vaccination, with favorable results in some cases, while others were not in the least influenced. 1-5% solution was employed in gonorrheal conjunctivitis with remarkable success. In otitis media the results were unfavorable. Good results were obtained in cystitis, and acute enteritis in children. Results diametrically opposed to the above were obtained by Gindes and Balardzsheff. These authors found (*Russki Archiv Patologii, Klinitcheskoi Mediciny i Bakteriologii*, June, 1901) that collargol in solutions of 1:1000, 1:500 and 1:100, for 24 hours, and 5:100 and 15:100, for 1 hour, failed to kill anthrax, subtilis, staphylococcus and streptococcus. The growth of these bacteria was in a measure prevented only when the stronger solutions were employed and when the latter were allowed to act for a long time. Injections of even small doses into animals produced a local infiltration and a fever which lasted for about 2 weeks. Injections of collargol followed within 1-2 hours by inoculations *in the same place* of anthrax, saved the animals from an otherwise fatal issue, but when the inoculations were made at a point *distant* from the place of injection, the animal succumbed. Repeated injections of the salt failed to immunize the animals against infection or antagonize an infection already present. Injections directly into the blood current not only failed to save the animals from a fatal issue but produced death in animals not infected. The conclusions reached by the authors from their experiments on

animals are that argentum colloidale Credé exerts only a slight local antiseptic action, having no systemic effect as far as preventing or curing infection. The introduction of the salt directly into the blood leads to immediate death, or the latter may be protracted and result from exhaustion. Having established these data the authors subjected the drug to a clinical test and tried it in a considerable number of cases of scarlet fever and other infectious diseases. The results were fully in accord with those of the laboratory experiments. No beneficial effects whatever were observed. Reference is also made to the observations of Baginsky, Naltenius and Kunze-Krause who failed to see any good effects from the use of this drug. It is difficult to reconcile the conflicting results obtained by Schlossmann and the authors, since in either case they were obtained from laboratory experiments as well as clinical observations. The only way to settle the question is to repeat the experiments of these authors, meanwhile we must suspend judgment until additional data are obtained from reliable quarters.

Zomotherapy in Phthisis.—In the treatment of phthisis raw meat holds a high place as a food, especially on account of the fact that it is more easily digested than cooked meat. Richet and Héricourt have successfully treated tuberculosis experimentally produced in dogs, with raw meat or the plasma pressed from the raw meat, and they believe that this acts by the antitoxic agents which are contained within it. The fact that the serum has the therapeutic effect as raw meat will be of great importance in the therapeutic point of view in man, as there are patients to whom the idea of eating raw meat is absolutely repugnant. One thousand grams of serum, a quantity comparatively easy to take, corresponds to the enormous quantity of three kilograms of meat. Héricourt has prepared a formula of the zomo-therapeutic treatment which we take pleasure in reprinting in this issue from the *Practitioner*. The question as to the manner in which thus treatment acts, is still open to question. It seems that in the later stages of the disease, zomotherapy is very dangerous, the muscle plasma is not tolerated, and this is probably due to the fact that the liver functions being insufficient, the normal digestive changes do not occur in the intestine. As a result the plasma is absorbed and carried into the general circulation in a raw state, giving rise to symptoms of intoxication similar to those following the intravenous injection of this juice into dogs. An analysis of the experiments of Richet and Héricourt has not yet permitted these investigators to decide whether the muscle plasma is an antitoxin, if it stimulates phagocytosis, or if it is only a special tonic of the nervous system which has the care of organizing the defences of the organism. Feeding with raw meat does not seem to prevent the development of tubercle, but the evolution is considerably slower, and the disease loses its character of a rapid infectious intoxication. Cooked meat is useless and meat of all kinds deprived of its serum is of but mediocre value. It follows that the obstacle to the development of tubercle has no connection with feeding or overfeeding, since cooked meat from this point of view is equal to raw meat. Dogs which are underfed, but receiving muscle plasma resist inoculation with tubercle better than dogs deprived of muscle plasma, but receiving a hyper-alimentation. Zomotherapy adds another weapon which may be relied upon as possessing value in our eternal warfare against tuberculosis. An interesting contribution to the literature of zomotherapy is presented by Leonard Robinson in the July number of the *Practitioner*, to whom we acknowledge our indebtedness for the foregoing facts.

Faradisation As a Cure for Insomnia.—Dr. Samuel Sloan, in the August number of the *Glasgow Medical Journal*, records three and a half-years' experience with faradisation of the head in the treatment of chronic insomnia and associated neuroses, comprising a series of forty-six cases. The author lays stress upon the fact that in order to be of avail this treatment should be conducted on scientific principles. His experience with the faradic current does not agree with that of many others who hold that it is an irritant when applied to the head. In his series of cases a variety of causes existed which brought about the state of insomnia such as continuous domestic cares, family trials, the pursuit of pleasure, shock or bad news and so on. Dr. Sloan states that the first effect of electricity is a benumbing influence on the parts to which the electrodes are applied—the brow and nape of the neck. As the treatment is continued, the patient usually remarks that it is making him sleepy. On the way home there is an exhilaration and unnatural buoyancy of spirits and feeling of comfortable lightness of the head. Dr. Sloan's methods are different from those generally employed in the use of the faradic current. One of the main differences in his method of applying the treatment is that his secondary coil is composed of many more turns of fine wire than are those generally used for clinical purposes and therefore the current is more sedative than irritating. He takes special precautions to have the current entirely under control, and very much restrained, especially in the beginning, and to have the patient under it as shown on the faradimeter scale before he or she can possibly be aware of it, employing it throughout only in small doses, and judg-

ing of the actual amount given by the faradimeter, which indicates when the current is on and what dose the patient is receiving. There were only four cases in which no favorable result was observed. In the balance of the cases the patients were greatly improved, and twenty were absolutely cured. Much of the success which this writer has achieved in the treatment of the condition seems to be due to the fact that a systematic course of treatment was laid down and carefully and persistently carried out.

Movement Therapy for Locomotor Ataxia.—In the *International Clinics*, Volume II, Eleventh Series, 1901, H. S. Frenkel contributes two clinical lectures on movement therapy for locomotor ataxia. He narrates the means by which the treatment was originally suggested. The fact that many patients who presented symptoms of marked incoordination who were brought before the class, practiced their parts until at the time of their exhibition, it was found that they were able to touch the tips of their nose or walk a crack, with but very slight signs of the incoordination which they had constantly shown previously. Every individual suffering from locomotor ataxia presents a special set of symptoms and requires special treatment. The movements suitable to the treatment of one person are not those which will give the best satisfaction for another. When the incoordination is very severe and the patient is confined to bed, exercises must be taken in a recumbent position. He is asked to put the heel of one foot on the other leg, touching now the front of the ankle, next the middle of his shin, and then his kneecap with his heel. Before any movement is done it must be definitely understood what the patient is going to do, and then he must perform it as exactly as possible Owing to the absence of the ordinary sensations, the performance of exact motion by the tabetic patient requires a very greatly increased effort of attention and very soon becomes wearisome, so that we must not overtax the patient in this form of treatment. At the beginning of movement therapy, after a movement has been accomplished from two to four times, another should be begun, and another part of the body should be exercised. All of this must be done in great moderation. These patients should be taught the movements necessary for walking quite as completely as if they had never been able to walk. The places where the feet are to be put, one after the other, should be marked on the floor, and each foot should be set down as accurately as possible in the place determined for it. There are certain conditions that contraindicate treatment of movement therapy. If the disease is in an acute stage and the symptoms are developing rapidly, it will usually be found that the movements fatigue the patient, do very little good, and fail of their purpose of decreasing incoordination. The exercise should be stopped at the first sign of the occurrence of tabetic arthritis. This author emphasizes the fact that patients must move slowly and their confidence established. The secret of the success of the movement therapy of incoordination is that the exercises must not be performed in a routine manner but must be applied differently in each case. It may be said of this treatment that its claims are by no means as all-embracing as those of many of the remedial measures which have been suggested from time to time for this malady. However, the amount of good which any treatment may bring about in locomotor ataxia is somewhat difficult to determine, for the remission of symptoms which occurs from time to time may coincide with the adoption of some new form of treatment and the betterment of the patient's condition may be wrongly attributed to the treatment rather than to the actual remission in the disease itself. The fact, however, that a number of patients have been benefited by movement therapy, and that its practice tends to encourage this hopeless class of sufferers, would seem to warrant the treatment being given an extensive trial.

Pure Urea in the Treatment of Tuberculosis.—H. Harper (*The Lancet*, June 15, 1901) gives the following manner of treatment of tuberculosis: The patient is put on very nutritious food; as much fresh butcher's meat as possible was consumed, with eggs, milk, cream, and one good portion of well-cooked green vegetables daily. One kidney well cooked or an equal weight of fresh liver daily was consumed with some one of the meals, usually the breakfast. The patient lived in the open country in the hilly part of Derbyshire and spent his time entirely out of doors. He practised with light dumb bells every day and did some light gardening. Twenty grains of pure urea dissolved in water with half-minim doses of creasote suspended in a little mucilage four times daily after the principal meals: also one ounce three times a day of the following mixture: 24 grains of sulphate of iron, 30 grains of carbonate of potassium, one and ahalf drachms of powdered myrrh, one and a half drachms of powdered glycyrrhiza, 12 minims of creasote, and water to 12 ounces were the medicines ordered. "Perfected" cod-liver oil or bynol was taken fairly regularly once a day with the food.

The Use of Hypnotism in Therapeutics.—Freudenberg (*Frauenarzt, Leipsic*, June, 1901) states that hypnotism is valuable in treatment, and that the influence of suggestion upon arterial tension, is a fact beyond question. He states that the vasomotor disturbances are of the chief element in gynecologic affections. Suggestions may prove a valuable therapeutic measure in these cases. He details several recent cases of miracle cures, and regrets that the physician in these cases had neglected to utilize suggestion which would probably have proven quite as much a success in the hands of the physicians, as in those of the miracle-worker. An interesting personal case is described, that of a teacher who suffered from intense dysmenorrhea, which totally disabled her for several days each month, seriously interfering with her work. No pathologic collusion could be discovered. Freudenberg employed hypnosis. A lasting impression was induced in the third treatment, since which time menstruation has recurred without pain and in a perfectly normal manner.

Original Articles.

REPORT OF TWO CASES OF EPITHELIAL CANCER TREATED BY MEANS OF CHEMICAL CAUSTICS.*

By JAY F. SCHAMBERG, M. D.,

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I have the pleasure of exhibiting to you this evening two patients who have been treated for epithelioma by means of chemical caustics. The one is the aged woman who stands here to my left. I desire to present for your inspection this wax model which is an exact reproduction of this patient's face at the inauguration of treatment. By comparing the model and the patient you will be able to note the measure of improvement which has been achieved. I am sure you will all agree with me that the epithelioma is completely cured.

The history of the patient is briefly as follows:

E. G., aged 83, has had for fifteen years a growth upon the right cheek which had its origin in a warty looking excrescence. During the past five years this has gradually undergone ulceration, at the same time spreading upon the periphery. When the patient first came under observation in December, 1900, she presented upon the right cheek below and to the inner side of the malar bone, a crateriform ulcer about 1½ by 1 inch in diameter, with firm indurated borders and a rolled pearly edge traversed by capillary blood-vessels. The ulcer was covered with a brownish crust, the removal of which excited bleeding. Palpation of the growth showed that it extended to a considerable depth into the subcutaneous tissues. The skin surrounding the ulcer had a bluish red or violaceous color.

The patient was given a 25% pyrogallic acid ointment which was applied for a period of one week, at the end of which time there was a superficial slough present, which, when removed, showed the true depth of the epitheliomatous growth. It was then determined to employ a more active caustic, and a 50% of caustic potash solution was painted over the part every 3 or 4 days for about a period of ten days. Then the stick of caustic potash was applied to the deeper tissues after previous cocainization with a pledget of cotton immersed in a ten per cent. solution. The potash was applied several times at intervals of a few days, and finally there was employed for 36 hours an application of arsenous acid—25% in powdered acacia with sufficient 20% solution of cocain to give it the consistency of a paste. The parts were then allowed to granulate, a simple carbolized petrolatum being used to prevent crusting. A progressive diminution in the size of the ulceration took place, until at the end of four weeks it had com-

pletely healed. This was accomplished more through contraction of the tissues than as a result of granulation. It will be noted that the only scar visible is a linear cicatricial trail occupying almost the line of the naso-labial fold. The cosmetic result in this patient is, I think you will agree with me, highly satisfactory. Whilst some pain was experienced by the patient during a part of the treatment, it was never sufficient to give rise to any serious complaint.

The second patient is a man aged 47 years, who has upon the upper lip and right ala of the nose an epithelioma of the type of rodent ulcer. This patient was operated upon about one year ago by an eminent surgeon of this city, but the growth has since recurred, at the lower end of the cicatrix. Upon examination with a probe I found that the disease extended almost down to the superior maxillary bone. The patient is now under treatment, and I present him to illustrate the appearances during the progress of treatment. All of the epitheliomatous tissue has been destroyed upon the surface by means of a 50% arsenous acid paste, and in the subcutaneous tissue by means of the stick of caustic potash. There is now present a deep but

*Read at the meeting of the College of Physicians of Philadelphia, June 5, 1901.

healthy granulating ulcer, which I have every reason to believe will completely heal up.

Time will not permit of any extended exposition of the treatment of cancers of the skin by means of caustics. Suffice it to say that most writers on the subject at the present day regard arsenous acid in a 33-50 or 75% paste, as the most eligible caustic for general use. Its employment is accompanied by pain, but this may be, in a measure, mitigated by the admixture of cocain. It is ordinarily kept in apposition with the diseased part 24 to 48 hours, according to the strength of the paste employed.

Caustic potash is also useful, more particularly, in my experience, in working in the depth of an ulceration. Its action is immediate and powerful, and care must be exercised in its use, as it destroys more extensively than is at first apparent to the operator. It disintegrates diseased and healthy tissue alike, in which respect it differs essentially from arsenic, which exerts a selective action on morbid tissue.

The use of chemical caustics should be accorded a distinct place in the treatment of cutaneous cancers. Judiciously used in appropriate cases, they give eminently satisfactory results. It is far from my intention to disparage the surgical treatment of cancer. In extensive, deep-seated carcinomata the use of the knife should be strongly counselled. Superficial epitheliomata, however, may be equally well or better treated by measures other than ablation. The cosmetic result is often superior to that obtained by excision, and the permanence of the cure is equally assured. Furthermore, many timorous people (among whom may be included not a few physicians), who would shrink from the thought of operation, will readily submit to non-surgical treatment of this character.

SHALL THE PHYSICIANS IN CITIES DISPENSE MEDICINES?

By M. H. FUSSELL, M. D.,

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If "the laborer is worthy of his hire" be true of any station of life, certainly it is applicable to the work of every conscientious physician. No one not intimately acquainted with a doctor's life can have any conception of the wearing mental and physical strain under which every one labors who has patients and does his full duty to them.

To the unthinking, the fee received for a professional call seems large and easily earned, when the fact alone is considered that the doctor rides to the door, spends a fraction of an hour in the house, and collects his fee. When the apparent ease and rapidity with which this is done is compared with the hours of toil, of hard manual labor, perhaps, which have to be spent by the patient to earn the same amount of money, the doctor's life seems still more luxurious. All acquainted with the facts, however, know that the mere making of a routine visit is the smallest and easiest part of the doctor's life. No physician does his full duty who does not keep himself fully abreast of the rapid progress medical science is making, who does not study each individual case which comes under his care with the greatest pains, who does not make a physical examination of every patient, who does not examine the urine of each patient and the blood and sputum of many. The study of journals, of books, of the individual cases under a doctor's care, takes more time, is more wearing than the making of visits, because it has to be done when the physician is tired out with the physical labor of a long list of visits, and because it is constantly interrupted. Add to this the anxiety experienced by all who are in attendance on serious cases, because of the life involved, because of the fear and trust of the patient's friends—and certainly a doctor's work becomes hard work without any relief save in sleep. It is important work, it is divine work. If these be facts, then all proper means of increasing a doctor's income are just and should be carefully followed and judiciously handled.

Unquestionably dispensing of medicines is a means of increasing a physician's income. In the suburbs of large cities the young physician who does not carry his hand grip containing ready-made pellets, and ready-made formulae—is almost as rare an individual as the doctor of olden times without saddlebags containing his armamentarium. This is so, I believe, because there is a widespread belief founded on fact that the young doctor who carries his own medicines sooner and more readily gets into practice. Men have sat in my office by the hour arguing for me to adopt the practice they have, saying that with less labor their income had been increased two or three thousand dollars a year, by giving their own medicines. So I believe we may grant that the doctor who carries his medicines increases thereby his income.

Is it a proper means? Is the patient benefited? Is the doctor benefited? If dispensing drugs is of real benefit to either the doctor or the patient, it is a proper means of increasing one's income. On the other hand, if it is harmful to either physician or patient, certainly it is an improper means of increasing one's income. Though the writer has not personally dispensed drugs, he is quite certain that one's income may be increased thereby. The patient is benefitted, if by receeiving medicine directly from the doctor, he gets drugs which are better, which are more exactly fitted to the case, at less cost.

The physician is benefited if giving out medicines enables him to more accurately prescribe, to prescribe with less trouble, to prescribe with less expenditure of time and to make more money thereby.

Let us first consider the patient's part in the contract. Does he get better drugs when the physician gives them to him from his case or shelves, than he does when a prescription is written and is filled by a careful druggist? The drugs dispensed by the doctor must either be in the form of pills or pel-

lets, or he must himself concoct the mixture. If the drugs are dispensed as pills or pellets, in the great majority of cases they have been weeks or months, perhaps years, in that form, and can be about as insoluble and indigestible as a drug can well be. Indeed, I have myself repeatedly seen such pellets passed per rectum in their original shape and form. It may be answered that the patient can be directed to reduce the pellets to powder; this may surely be done, but the drug is then in such a nauseating state in the majority of cases that it is entirely unfit to take. Any one who has seen in the house of patients, mixtures compounded by a physician, not a skilled pharmacist, can but wonder how the patient manages to swallow them, so nauseating in appearance are they.

Are the drugs better adapted to the case treated when they are given by the doctor than when they are dispensed by a skilled pharmacist upon the prescription of a physician? The man must be extremely careful, extremely conscientious, who, if he wants to give to a patient 1-30 of a grain of strychnine and does not have it by him, who will not give him, say, 1-40 of a grain. Who, when the patient needs a mixture containing codeine, will not give him one containing morphine, if the codeine be not at hand. This may be harmless, but certainly if there is any good in drugs it is not developed by substituting one for the other. I believe, I know by experience with other men's practice, that this substitution is certainly being practiced, and that instead of the patient receiving medicines better fitted to the case, receives what the doctor chances to have in stock.

Probably the medicines given by the doctor cost less than those dispensed by a pharmacist, but a bad article is dear at any cost, and this is doubly true when the bad article chances to be a drug or a physician. The difference in cost, however, is more apparent than real. I know of innumerable cases where a patient has been given medicine enough to last a week, when he could have had enough for a month. Four visits to the doctor's office had to be made and paid for when *one* would have sufficed.

Now as to the physician's part. What applies to the patient in regard to accuracy, applies equally well to the physician. I believe the instances are extremely rare when accurate work is done if the doctor dispenses his drugs. Is dispensing less trouble than prescription writing, and does it save time?

It is unquestionably but little trouble to write a prescription and can take but a fraction of the time that it does to put up a package of medicine. More money is made by the practice, because patients are increased in number, thinking that it is cheaper to employ a doctor who gives his own medicine. But a "cheap doctor" is a "bad lot."

If the points I have endeavored to make are well made, then, assuredly, dispensing drugs, by a physician who has access to a competent pharmacist is *not* a proper means of increasing a doctor's income and should not be practiced. The man who enters medicine with the acquisition of wealth as his sole or even as his chief aim, entirely mistakes his calling. The aim of the practice of medicine is entirely other than the acquisition of wealth. While in the present status of society the ordinary man who practices must collect fees from his patients, and while he should be paid well and promptly, he who has the fee always in his mind will assuredly never advance the cause of medicine, will never do the careful, painstaking work for which no pay can possibly be received, but will assuredly make a routine physician, and perhaps may get rich.

There are other avenues of wealth earning which are entirely legitimate and which should be followed by the "fee doctor."

I believe that the practice of medicine should not be engaged in by any one who does not expect and *desire* to see innumerable cases for which he cannot be paid. He *must* see such cases if he expects to do his duty in the least degree. He must do much work in pay cases for which a fee cannot be collected, or his patients will suffer, and the cause of medicine will not be advanced.

I believe the reason for drug dispensing by doctors may be found largely in the desire to make money of which I have spoken, but also in the fact that many of our pharmacists are *prescribing* pharmacists. It is the duty of every self-respecting physician to use his influence so that his prescriptions may be filled only by the pharmacist who is skilled, who is honest, who does not usurp the physician's rôle and prescribes. For of the latter he can have no conception.

SCURVY IN THE MOUNTAINS OF COLORADO.

By G. H. CATTERMOLE, M. D.,

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Many miners living in the mountains are compelled to subsist on a diet which is almost destitute of fresh vegetables and fruit. This is especially true in the winter when it is hard to get fresh provisions.

On March 17, 1899, David O'Neal, a miner, was admitted to University Hospital. He was a bachelor, 50 years old, family history good, and personal history clear of disease for the past twenty years, except that for three or four years he had noticed some swelling of the feet and legs. He had lived alone, at an altitude of about 8,000 feet, for seven years, during which time he had prepared his own food, which consisted largely of bread, salt meats and canned goods.

On entrance to the hospital he presented a general cyanotic appearance of the skin and mucous membranes. In general appearance the face was swollen, dull and expressionless. The cheeks pitted slightly on pressure; the conjunctiva was congested and the vision poor; the gums were swollen, spongy, and blue, and bled freely. The tongue was swollen and speech thick. The breath was offensive. The lips were thick and blue, and the veins of the lips

were very much distended. The neck was bluish-red in color and very full, measuring 19 inches in circumference. The thyroid gland measured seven inches transversely by three and a half inches vertically. The arms were normal in appearance to

just above the elbow, where the color changed to a bluish-red, and from this point to the finger ends there was marked swelling and edema. The skin of the forearms and hands was rough and scaly. The feet and legs presented a similar appearance to that of the hands and forearms. On the shins were several dark blue spots which later discharged serum and ulcerated. The penis and scrotum were very edematous. The liver was enlarged, extending one and one-fourth inches below the free border of the ribs. Examination of the chest showed increased resonance on percussion in front. Auscultation gave prolonged low-pitched expiratory murmur. (The lungs were emphysematous.) The area of cardiac dulness was increased and moved toward the left, the apex beat was two and a half inches below and three-fourth inch to the left of the left nipple.

His temperature and pulse rate were about normol or below normal during his entire stay at the hospital.

The appetite remained good; the bowels moved daily, and the urine was normal.

The nature of the trouble was not recognized for several days after he entered the hospital; during this time he was given calomel and heart stimulants —strychnia, digitalis and aromatic spirit of ammonia. Under this treatment and ordinary diet the amount of urine passed reached 71 to 88 ounces in the 24 hours; this rapidly reduced the edematous condition. When the diagnosis of scurvy was made he was started on a generous meat and vegetable diet, with fresh fruit at meal times and lemon juice between meals; aromatic spirit of ammonia was the only medicinal agent continued.

Under this treatment the cyanosis and edema disappeared; the mucous membranes assumed a more normal condition, and his mental status was much improved. He was thin and the skin had a wrinkled, rough appearance when he left the hospital, one month from the day of entrance.

On leaving the hospital the patient went back to his cabin in the mountains and remained there until April of the present year, when he was again admitted to the hospital with symptoms the same as those presented two years ago. This time the treatment was mainly dietetic; he received soup, meats, eggs, potatoes, prunes, bread, cereals, lemons, oranges, etc. Strychnia was given as a heart stimulant and magnesium sulphate for the bowels.

The patient entered the hospital April 22, and was dismissed May 20, in such an improved condition that he returned to his cabin.

A REVIEW OF THE TREATMENT OF INTESTINAL OBSTRUCTION BY ATROPIN.

By JOSEPH SAILER, M. D.,
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One of the most interesting features of recent therapeutic development is the empirical use of atropine for the relief of intestinal obstruction. Practically all the literature on this subject has appeared in the *Müncheuer Medicinische Wochenschrift*, for the past three years. The treatment was first suggested by Batsch (1), who had a case of what he considered dynamic ileus with severe hiccoughing. An operation was apparently out of the question, and he therefore resorted to heroic doses of atropine, giving 1-13 grain (.005 gram) twice in one day; both times hypodermically. In a few hours there was a copious evacuation of the bowels, and the patient recovered. The theory, of course, was that the atropine in these huge doses completely relaxed the spasmodic condition of the intestine, and permitted the bowel to return to its normal conditions, and its stagnant contents to flow forward. In this communication, which was presented as a brief therapeutic note, not even receiving the dignity of an article, Batsch mentioned the fact that in 1788 Theden had employed large doses of belladonna in the treatment of ileus.

At the same time Gebser reported another case, in which, at Batsch's suggestion, he had used atropine hypodermically. The patient, a woman of 20, had been obstinately constipated for five days. She received three doses of 1-26, 1-22, and 1-22 grain. The third injection was followed by a large evacuation and complete recovery. Festner and Scheumann also reported cases in which this treatment had been employed, and recovery had ensued. It is remarkable in all these instances, that the physiological effects of atropine either did not appear or were so slight as to escape notice. The same year Batsch reported an additional case in which he mentioned

slight delirium, and Reuss one in which smaller doses were given, at first without result, and finally on the 7th day, after three days of fecal vomiting, 1-22 grain was given. The vomiting stopped immediately, and the patient passed a large amount of flatus, and had an evacuation within 18 hours. Reuss expresses the opinion that larger doses could have been used at first.

From this time on cases continued to be reported at frequent intervals. In nearly all of them the results were highly satisfactory, although an accurate diagnosis appears to have been made in a very small proportion, as, for example, in one of the cases subsequently reported by Batsch, in which operation was ultimately necessary, a band of peritoneum was found obstructing the colon of the small intestine.

The first case with an unfavorable outcome was reported by Lüttgen, and concerned a woman of 65, who had constipation, followed on the second day by fecal vomiting. As there was a small hernia herniotomy was performed without relief. On the 7th day 1-13 of a grain of atropine was administered. This was followed by severe convulsions, delirium and physiological effects. In 12 hours the patient had an evacuation and was greatly relieved; but the following day all the symptoms recurred. The family opposed a renewed administration of atropine, and the patient died, as Lüttgen believes, because it was not employed. The next unfavorable case was reported by Höchtlen, who administered 1-22 of a grain to a woman of 71 on the eighth day of persistent constipation with pain in the abdomen, that could not be relieved by enemas. The physiological effects were very severe, no benefit was experienced, and the patient died on the 11th day. An autopsy was performed, and adhesions occluding the colon were discovered. Bofinger subsequently reported two cases in which very large doses had been employed; 1-17 or a grain twice, and 1-32, once in one case, and 1-32 once and 1-22 twice in the other. Both patients died. At the autopsy the disease in the first case was found to be carcinoma of the pylorus complicated by a volvulus of the ileum. The second case was an incarcerated inguinal hernia with gangrene of the intestine. In neither case was the slightest benefit observed. On the other hand, Hamig reports an interesting case in which, after extirpation of the right kidney for carcinoma, the patient was obstinately constipated followed by collapse, tympanites and fecal vomiting. On the seventh day 1-22 of a grain of atropine was administered, and caused active delirium. Nevertheless, the patient improved, and the following day an enema of oil caused a profuse evacuation of the bowels. He suggests that the symptoms were due to mesenteric embolism, although this seems rather unlikely.

Manifestly in discussing this treatment we must consider all the circumstances under which it has been employed, the reasons for its employment, and the way in which benefit is probably produced, if at all. At first it was practically the last resort, was only used in those cases in which death seemed inevitable, and in which the possibility of operation was entirely excluded. After the brilliant results then obtained, it began to be used more generally in cases where operation might have been attempted, but in which it was thought advisable to use milder methods first. In desperate circumstances its employment should be judged leniently. A physician may try any method, no matter how reckless, if he thinks that it gives an additional chance to a case in which the prognosis is apparently fatal. The courage displayed by Batsch and his colleagues is considerable when we consider that the law against malpractice in Germany is very strict, and that Batsch considerably exceeded the prescribed dose.

There are certain features, however, in the series of articles that have been hitherto written, that demand explanation. First, why is it that physiological effects do not appear in some cases, and in others are so severe that they endanger the life of the patient? Second, in what manner does atropine overcome the obstruction? Is it certain that it is merely by the release of spasm?

To the first question, no satisfactory answer can at present be given. And to the second, in the absence of accurate diagnosis in the cases that recover, we are equally in the dark, but it seems not unlikely that the explanation of Batsch and Simon, both of whom consider it to be due to paralysis of the smooth muscle fibres of the intestine, may have an element of truth, although we are accustomed to consider such paralyses as leading to the most obstinate form of constipation. The question now arises whether it is justifiable, in view of the number of cases already reported (23) to employ atropine in similar cases? This is one that is very difficult to answer. Heroic doses appear to be the only ones that are efficient, and yet such heroic doses are unquestionably in themselves dangerous. Moreover, in many cases of intestinal obstruction, as has been proven over and over, delay is exceedingly dangerous, and the time consumed in awaiting the outcome of an atropine injection, may be sufficient to turn the scale against the patient. Of course, this does not apply to cases that are inoperable, and at present it seems to us that these are the only ones in which the atropine treatment, as employed by Batsch, should be used, although smaller doses frequently repeated, have proved, in our own hands, and doubtless in those of many other physicians, valuable in aiding the relief of prolonged constipation.

We append a table of the cases already reported, with their results. It will be seen by this that altogether 23 cases are on record, with four deaths. Of these one was supposed to be due to the fact that the relatives would not permit the further administration of the drug. Of the 19 cases that recovered, one was not relieved by the atropine, and only cured by a laparotomy. So that the record stands: 18 recoveries and 3 deaths. One recovery due to other causes, and one death due possibly to insufficient administration of atropine. Certainly, considering the serious nature of the conditions in which it was employed, an extraordinarily favorable record.

TABLE.

No.	Sex.	Age.	Diagnosis.	Max. Dose. Grams.	Total Dose. Grams.	Result.	Remarks.
1	——	—	Dynamic ileus	.005	.01	Recovery	
2	f	20	Constipation	.008	.008	"	
3	——	—	Intussusception	.008	.008	"	
4	f	51	Constipation	.001	.0 2	"	
5	f	23	Constipation after difficult child-birth	.005	.009	"	
6	m	19	Persistent constipation	.008	.004	"	
7	f	60	Persistent constipation	.005	.007	"	
8	m	85	Pain and fecal vomiting (volvulus?)	.005	.01	"	
9	f	45	Parametric adhesions	.005	.015	"	Laparotomy.
10	f	32	Pain and vomiting	.005	.005	"	
11	m	62	Pain and constipation	.005	.015	"	
12	m	42	Pain, tympanites and collapse	.001	.001	"	Temporary relief from opium and castor oil.
13	f	28	Constipation, fecal vomiting	.005	.008	"	
14	m	33	Constipation, fecal vomiting	.001	.005	"	
15	f	65	Constipation, fecal vomiting	.005	.005	Died	Severe physiological effects. No relief from herniotomy. Further treatment refused.
16	m	25	Pain and constipation	.008	.005	Recovery	Slight physiological effects.
17	f	29	Constipation and tympanites	.008	.008	"	Severe physiological effects.
18	f	71	Persistent constipation	.008	.008	Died	Severe physiological effects. No benefit perceptible.
19	m	52	Constipation, tympanites (volvulus and carcinoma of pylorus)	.004	.01	"	
20	f	56	Inguinal hernia with gangrene of intestine	.008	.008	"	Severe physiological effects. Operation.
21	m	—	Incarcerated hernia	.008	.008	Recovery	Olive oil also administered; operation impossible. Slight physiological effects.
22	f	64	Tympanites, constipation	.008	.005	"	Severe physiological effects.
23	m	68	Ileus	.008	.005	"	
24	m	50	Mesenteric thrombosis (?) after removal of cinomatous kidney	.008	.008	"	Severe physiological effects.

* The dose is given in grams. 0.001=1/16 grain.

REFERENCES.

(The literature all appears in the Muenchener Medicinische Wochenschrift in the references, therefore we shall give only the name, year and page.)

Bartsch, 1899, p. 1522.
Gebser, 1899, p. 1522.
Festner, 1899, p. 1522.
Scheumann, 1899, p. 1522.
Bartsch, 1899, p. 1758.
Reuss 1899, p. 1758.
Batsch, 1900, p. 931.
Marcinowski, 1900, p. 1492.
Holz, 1900, p. 1664.
Demme, 1900, p. 1665.
Luettgen, 1900, p. 1665.
Dietrich, 1901, p. 302.
Simon, 1901, p. 462.
Hoechtlen, 1901, p. 463.
Bofinger, 1901, p. 662.
Adam, 1901, p. 663.
Gaehtgens, 1901, p. 664.
Middeldorpf, 1901, p. 664.
Haemig, 1901, p. 929.

THE HEMATOLOGICAL DIAGNOSIS IN PRACTICAL MEDICINE.*

By EDMUND BIERNACKI,

of Warsaw.

During the last ten years the development of hematology has been of great interest to the researching medical profession, as were the investigations of the stomach, and it is due to this development that a new branch of clinical medicine has been created, namely, that of hematological diagnosis.

Fifteen to twenty years ago the clinical examination was restricted to microscopical studies of a fresh drop of blood, principally to demonstrate abnormal forms of the red blood corpuscles, or sometimes to prove the familiar *spirochete Obermeieri.* At present one might be induced to consider the hematological diagnosis as a kind of diagnostical panacea which renders the recognition of disease possible in every instance in which formerly it was difficult or impossible. But the blood examination does not appear to be of such importance in modern medical everyday life, as is implied by the clinical text-books, and it is properly conducted only by a few because of the difficulty of technique.

If a practitioner intends to study modern hematological diagnosis with the aid of the text-books, doubts may arise as to the advantage of clinical blood examinations, even before he has been able personally to test the value of one or the other methods. If, on the other hand, he intends to investigate the alleged universality of the hematological diagnosis, disappointment will not be slow to follow. In fact, there is something in modern clinical hematology which makes it as unsatisfactory as the clinical diagnosis of the stomach contents; the latter plays a much more inferior part in medical practice than should be expected according to its development.

Before all, we have to agree upon some general principles which concern medical diagnosis. The medical perception of the disease cannot be anything else than the search for and the finding of the harmful pathological causes among the presenting and simulating pathological manifestations which are the original starting point of subjective troubles and objective symptoms. By demonstrating the causative noxiousness in a given pathological case therapeutic points are gained—provided therapeutic agents are at the disposal—and on the other hand, an idea may be formed of the fate of the patient.* With this state of affairs, only such methods will become "diagnostic" for the practitioner, by means of which the recognition of certain pathological causative affections is brought about, either mediately or immediately; the others—even if they are called "clinical"—should not be admitted to the medical mind. Consequently, medical men can only incorporate into their stock of knowledge those of the recently discovered diagnostic methods of examination which aid in the recognition of such pathological affections which so far have not at all, or only with difficulty, been accessible to diagnosis. Also those new methods will be accepted which are proposed as objective ones in place of the previous subjective ones, without accomplishing more in principle; finally, those methods of investigation may count on being successful with the practitioner which allow of a more rapid demonstration of the

*Translated from an original article published in von Volkmann's Sammlung klinischer Vortraege.

*For explicit proof and discussion of the above sentences I refer to my treatise which is soon to appear: "Modern Medical Problems," also to my paper "Modern Medical Science. Nature and Limits of Medical Knowledge," Leipzig, B. G. Teubner, 1901, (Aus Natur und Geisteswelt, No. 25,) pp. 6-15, 68-75.

causative affection than has been possible before. it is true, the medical profession demands of new diagnostic methods that they be accurate, as simple as possible, easily carried into effect, and within reach of the physician anywhere and at any time.

That practical medicine insists upon the above, is proven not only by the historical development of the diagnostic methods of investigation, but also by the existing inventory of these methods in the memory and in the possession of every experienced practitioner. Röntgen's transilluminations of the body which so quickly gained general recognition in practical medicine, actually demonstrate many injuries which often cannot be recognized by any other agent. It is true, the Röntgen methods are not quite as simple and easy of access as percussion and auscultation; unfortunately, many new and important diagnostical achievements are subject to the same shortcoming: as for example, the handling of the microscope. In general, according to our present experience, simplicity of methods is not in accord with progress in medicine; on the contrary, with the development of our science, not only the intellectual problems of the physician increase, but also the physical and material ones.

Therefore the slight popularity of hematological diagnosis is not caused by the fact that it is simple. In fact, technically, it is perhaps the most difficult of the recent accomplishments of diagnosis. Many hematological methods of examination require a good deal of patience before sufficient skill is acquired to obtain trustworthy results. It may be mentioned, by the way, that securing the blood for the clinical examination requires special care on the part of the investigator; the puncture of the finger-tip should be made quickly and adroitly, in order to obtain a few large drops of blood, and also to create the impression upon the patient that the blood examination, although not quite agreeable, is by no means a very troublesome interference. The physician who repeatedly punctures his patients, is not very apt to popularize the hematological examination with his clientele.

Much more important is the fact that modern hematology recommends to the practitioner many so-called clinical methods of investigation which cannot be acknowledged to be practical. This is the very same phase which characterizes modern gastrology, in fact, also the oldest urology, and the cause of it is the imperfect separation of the aims and problems of practical medicine from those of science proper. Every method of pathologico-scientifical research, and perhaps all the results obtained by the same, have been transferred to the practical sphere of activity of the physician without consideration whether these methods and results may be in accord with the objects of this activity. Accordingly, as in gastropathology, in which probably not a single branch of scientific research existed without presenting the practitioner with a "clinical" method—for example, the dozens of methods to determine the amount of hydrochloric acid in the gastric contents—in like manner the recognition of pathological changes in the blood leaves an "easy and simple" method of investigation, to prove at the bedside qualitative and quantitative anomalies of the blood, the significance of which as primary causative pathological affections has as yet not been demonstrated. Many of these "clinical" methods of examination have come into existence through modification of the exact scientific methods; but with this "becoming practical," the method generally suffered a great deal in relation to accuracy and reliability. If one by means of them attempts the solution of scientific (pathological) problems in the clinic, the results thus obtained are frequently looked upon with suspicion by the representatives of the pure disciplines; if, on the other hand, one tries to apply the method in practice, such procedure is considered a waste of time by many sober practitioners who are inspired by a good clinical spirit.

For instance, one of the favorite themes has recently been the elaboration of a method to determine the alkalinity of the blood in such small quantities as may be at the disposal clinically. Even such methods have been conceived. Without reference to differences of opinion in the doctrine of the pathological alkalinity of the blood, nothing has as yet been found out with reference to when and under what conditions a certain fluctuation of the blood-alkalinity (in the sense of increase or decrease) is incidental to the causative noxiousness of a given pathological condition. Therefore, if in a particular case of uremia, diabetic coma, chlorosis, etc., a decrease of the blood alkalinity is demonstrated, one knows just as much after as before the examination of the blood in regard to therapeutic indications and prognosis.

Very instructive also is the history of the methods of morphological hematoscopy, and that, too, of those for the study of the different kinds of leukocytes. It is true that Ehrlich hoped to be able to diagnosticate initial stages of leukemia by the increase of the eosinophiles; but as the increase in the number of eosinophile leukocytes could be demonstrated just as much in leukemia (at the same time, not in all forms of the disease) as in bronchial asthma, in some cases of neuroses and sometimes in hemorrhages, the manifestation lost its diagnostical significance entirely (in regard to leukemia). In spite of a very large number of examinations, hardly a single pathological condition can be quoted at present, in which the physician could learn more in regard to therapeutical indications, and even to prognosis, through the determination of mutual quantitative conditions of different kinds of leukocytes, than can be concluded from the general clinical examination and observation of the patient.* If asked, in regard to leukemia proper, why I make dry preparations of blood in every case of this disease, I will say that I do this, simply to have a collection of fine and interesting preparations which may eventually be of value for scientific elaboration of leukemia. The diagnosis of leukemia may be made with certainty by reason of the clinical symptoms and of the results of the simple count of the white blood corpuscles; but then the therapeutic indications and the prognosis are in evidence. The further blood examination (the examination for different kinds of leukocytes) in order to determine

*Confr. the essay of Bettmann, "The practical Significance of the Eosinophile Cells" (Sammlung klin. Vortraege, No. 26, 1900), with similar views.

the form of leukemia with the aid of blood results can be dispensed with by the physician, simply because the now prevailing forms of leukemia are properly artificial products of classification and—aside from acute and chronic leukemia—may not show any difference in principle in regard to course and prognosis.

Without any purpose whatever for the practitioner are many bacteriological blood examinations, for instance, those for generators of pus. It is probably quite certain that in many cases of septicopyemia staphylococci and streptococci may be cultivated from the blood; the same is sometimes the case in pulmonary tuberculosis. The diagnosis of septicopyemia is a comparatively easy matter for the experienced physician, even without examination of the blood; the finding of staphylococci or streptococci does not add to the certainty, especially as it is not at all constant. On the other hand, those difficulties which may arise with it in regard to the localization of the disease (endocarditis or deep-seated abscess) are not in the least solved by a bacteriological blood examination.

What, then, does remain for the practice of hematological diagnosis? Out of the whole number of the so-called "clinical" methods of blood examination only very few are supposed to be of advantage in this respect. But in spite of this it is a fact, that, with a correct application of the methods to be discussed, results at the bedside may be obtained which cannot be accomplished by any of the general clinical methods of examination, and about this I intend to report, principally by reason of many years personal experiences, during which I did not only take cognizance of the purely scientific methods, but have also examined many of the "clinical" ones as to their practical values. Many of my views, at which I arrived in the course of time, conform with those of other hematologists and were partly expressed once before in my previous treatises on the blood. Here I intend to condense everything in order to give a compact statement of what is to be placed into the hands of the practitioner as mature experience in the domain of hematological diagnosis. My essay may not be quite exhaustive, inasmuch as I am lacking an extensive personal acquaintance with the most recent branch of hematology, viz.: serodiagnosis. But the latest reports about the practical value of this method of examinatoin, which aroused great expectations regarding the diagnosis of typhoid fever, also of tuberculosis, are much less favorable than the first.

If one decides to make blood-examinations for practical purposes, the general principle should not be lost sight of, that the results of hematological examinations are but rarely of absolute value (i. e., of value *per se*). One has tried, and is even doing so until now, to discover in the blood specific diagnostical signs of many diseases of the modern classification (for instance, diabetes and uric acid diathesis). But, generally, these experiments fail entirely, which tends to increase the distrust in regard to hematology. The question culminates in the point, that by means of blood examinations almost no pathognomonic signs are discovered, but only ordinary "disease symptoms" which may be present in an equally intensive development. Therefore, as a rule, the symptoms of the blood alone will not permit making a diagnosis, but only jointly with other results of the examination of the patient. But, inasmuch as the changes in the blood in the majority of the methods which are used at present, can frequently be calculated very closely and expressed in figures, they can claim quite a demonstrative power which is absolutely not the case in many results of the general clinical examination of patients.

If the significance of the blood examination becomes "absolute," these exceptions are generally known. Let me call attention to the *plasmodia malariae*. Here the now generally accepted cause becomes the blood-symptom; therefore, the positive finding of *plasmodia malariae* in the blood preparations decides the diagnosis, even if the other clinical symptoms do not present the typical picture of malaria. But the experienced practitioner will scarcely value as highly the demonstration of the plasmodium in malaria, as, for instance, the bacillus of Koch in the sputum. Malaria is so often typical that it does not present any difficulties of diagnosis; in less classical cases the pathological picture frequently assumes more precise outlines just when one intends to make use of the blood examination. Thus it happens that in the overwhelming majority of cases of malaria the examination of the blood simply confirms the diagnosis. At the same time the fact should not be underrated that the examination of the blood enables us to decide more rapidly upon a positive diagnosis of malaria, than the general pathological picture would allow us to do. Unfortunately, the practical value in this respect is considerably lessened by the well-konwn fact, that in not very rare and quite typical cases of malaria the demonstration of plasmodia fails, and only repeated punctures for blood and repeated examinations of the blood preparations will yield a positive result. This shows that this kind of examination is often tedious and requiring much time. But it is certainly worth all this trouble, if by means of the blood examination an indistinct pathological picture is transformed into malaria; then the demonstration of plasmodia may claim the highest position among diagnostic expedients. But the latter cannot be a frequent occurrence in our latitudes where only quite typical cases of this disease come under observation.

The finding of an enormous increase of the white blood corpuscles—over 100,000 in one ccm.—requires less comment. In itself this figure means the presence of leukemia. Exceptions to this rule have scarcely ever been observed. On the other hand, the diagnosis of leukemia should not be made, even with the most typical general clinical picture of the disease, until the above increase in number of leukocytes has been demonstrated by means of counting the blood corpuscles. If this increase be missing, one has to deal with something else, viz.: with psendo-leukemia. Therefore, the count of the white blood corpuscles should be made in every case in which there is the slightest suspicion of leukemia, and not only if all the symptoms of this disease are present, but also in single appearing manifestations, for instance, in an apparently idiopathic hypertrophy of the spleen, or in pain of the sternum on

percussion. The healthy appearance of the patient does not preclude existing leukemia at all.

The reduction of the number of red blood corpuscles to one-fifth or one-sixth of the normal should be considered as conclusive, such as finding allowing us, with but little restriction, to form very important diagnostic and prognostic opinions. It is a fact, known to everybody who has collected statistics of numbers of blood corpuscles in pathological conditions, that a great decrease of the red cells in general is not a frequent occurrence. On the contrary, one becomes convinced that the organism endeavors to keep up the normal number of red blood corpuscles in disease as much as possible. Thus it often happens, that in such grave affections as tuberculosis and chronic nephritis normal quantities of blood corpuscles may be observed, and if a decrease takes place the loss does not surpass one-third or one-fourth of the normal. It is a well-known fact that the reduced number of red cells is not the rule in a primary affection of the blood, like chlorosis; in spite of a pronounced chlorotic appearance, or of anemic heart sounds and grave hydremia; almost normal figures are encountered in more than half the cases of this disease.

With such a state of affairs a considerable reduction of the red blood corpuscles must be regarded as a sign of a grave disturbance in the blood itself and also of the health in general, and diseases, like chlorosis, with this change in the blood, should be considered as more serious. With regard to the diagnostic significance of a decrease of blood corpuscles to one-fifth or one-sixth of the normal, it must be stated that such low figures—except in traumatic anemia—have as yet scarcely been observed in any other pathological condition than in the so-called pernicious anemia. Undoubtedly, it may happen that a recovering case of chlorosis is found with only 500,000 or 200,000 red cells in one cmm.; but an idiopathic anemia in the chlorotic age with less than 1,000,000 blood corpuscles should properly not be diagnosticated as chlorosis; at least, two special cases of this kind do not differ much in their entire course, or rather not at all from those of (idiopathic) pernicious anemia, inasmuch as the fatal termination was present also. Clinical experience teaches us that in general all grave anemic conditions which develop idiopathically do not present a favorable prognosis in mature age or in senility. There are some exceptions to this rule, viz.: cases of anemia with a greatly reduced number of blood corpuscles and severe hydremia which are caused by intestinal parasites (anchylostoma duodenale, bothriocephalus) and which, after the expulsion of the latter, are very apt to recover. The others, the etiology of which may sometimes be traced to atrophy of the gastro-intestinal mucous membrane, even if they sometimes show improvement under treatment, generally terminate fatally sooner or later. By reason of a rather large personal experience, I can state that I did not see any patient live long who had less than 1,000,000 red blood corpuscles, therefore, this result is of not only diagnostic, but also of prognostic importance.

But this finding in the blood is not only diagnostical, but at the same time differentio-diagnostical. A grave anemia may sometimes be caused by a neoplasm (carcinoma). If with severe anemic symptoms a neoplasm of the stomach or uterus, etc., can be demonstrated by means of the ordinary clinical examination, the anemia, being a secondary, not a primary, manifestation, loses its practical significance. But even with a negative result in this respect, the physician does not like to discard the supposition of an occult new formation as the cause of the anemia. Now the examination of the blood can infallibly help to decide the doubts. From numerous reports which have been collected in regard to blood changes in carcinoma, it follows that a neoplasm has not the property of causing a great reduction of the number of red blood corpuscles. In many cases of carcinoma of the stomach there are no perceptible changes in the blood at all, in fact, there sometimes occurs an increase of the number of blood corpuscles with a decrease of the water in the entire blood (a symptom of thickening of the blood). In other cases with severe hydremia (carcinomatous hydremia and anemia), the number of the red cells drops below 1,000,000, perhaps, only in severe hemorrhages or in the very last stage of the disease; otherwise, I observed, in conformity with other investigators,* still one-half to one-third of the normal, even in very anemic appearance.

Therefore, less than 1,000,000 red blood corpuscles will speak strongly against carcinoma as the cause of the anemia. However, the converse conclusion is not permitted, because not all cases of pernicious anemia show such a great decrease of red cells at the first examination of the blood. Consequently, the differential diagnosis between carcinoma and idiopathic affection of the blood by means of the above numerical conditions cannot always be made. The latter circumstance, however, is not so much of consequence, simply because the differential diagnosis between carcinomatous and idiopathic anemia is frequently of but little practical interest to the physician in view of unimportant prognostic differences. Furthermore, it happens that cases of pernicious anemia do not present themselves as genuine, but must be considered as transitory. Thus in some such cases with severe enlargement of the spleen and periodical increase of temperature (besides typical finding in the blood) the question arises, whether one has to deal with a "genuine" pernicious anemia with enlargement of the spleen as secondary symptom, or with an anemic pseudoleukemia. If, at the same time, the circumstances are taken into consideration, that pseudoleukemia is not a uniform and well-defined conception, that it sometimes impresses one as a sarcomatosis (lymphosarcoma), then it may occur that the diagnosis of "idiopathic" and "neoplastic" anemia for this fundamental reason cannot be accomplished.

Some investigators consider indispensable for the diagnosis of pernicious anemia the microscopical examination of the stained blood-preparations. This indispensability is properly precluded by what has been said before. It is certain that only the blood alone in pernicious anemia offers the best and richest material to explain the abnormal forms of red

*Compare Krokiewicz, Archiv fuer Verdauungs-Krankheiten, Volume 6, No. 1.

blood corpuscles. But in every case of severe hydremia,* just as much in chlorosis as in carcinomatous anemia, poikilocytes and nucleated cells and such like may be observed, and, therefore, no pathognomonic points are gained. It is true, it should not be overlooked, that according to Ehrlich, the mutual numerical proportion of different nucleated blood corpuscles can be turned to good account fo. prognostic purposes, for instance, the preponderance of normoblasts over megaloblasts is said to be a prognostically favorable symptom. On account of its great trouble, this laborious method of examination will hardly be much used in practice, especially if single cases of pernicious anemia do not vary much in principle in regard to prognosis. The course and the general symptoms are about sufficient for this purpose.*

To these three findings of blood one might add the spectroscopical results of blood examination, namely, the demonstration of CO-hemoglobin. But, unfortunately, this finding is in legal as in practical medicine of more theoretical than practical value, because the spectroscopical C O-reaction is frequently lacking, even in lethal termination. The diagnosis of C O poisoning will be but exceptionally encountered by difficulties in the clinic.

Much more important, however, will be the demonstration of *spirochete Obermeiri*. (rarely observed) which appears in the blood in all cases of relapsing typhoid. The finding of tubercle bacilli in the blood will be of decisive significance in doubtful cases, but this is a clinical unicity. In torrid countries one should occasionally look for *filaria sanguinis hominis*, where leprosy is suspected the demonstration of *lepra bacilli* might explain the case, as occurs in some syringo-myelitoid affections. Finally, it should not be left unmentioned that in many doubtful cases of morbus Werlhofii the anthrax bacilli have been discovered to be the cause.

It is evident that the practical application of these findings demands the knowledge of two methods of examination: First. The counting of the blood corpuscles; Second. The making of dry preparations of blood and their microscopical examination (sometimes, also, that of a fresh drop of blood).

As a third fundamental method for the practical examination of the blood, the hygremometry must be counted, i. e., the determination of the proportion of water in the entire blood. I shall presently prove, that this method furnishes the practitioner with more valuable semeiotic material than the old mode of counting the blood corpuscles, inasmuch as it at the same time completes the results of the count to a certain extent, and thus makes them of value at a place where they would be without sense, if alone.

Hygremometry combined with the count of the blood corpuscles, besides the microscopical examination of the dry preparations of the blood (mostly to demonstrate malaria plasmodia) comprises the plan according to which I make my blood examinations for practical purposes for the past four to five years, and which, I believe, embraces all the frequent eventualities which are bound to be taken into consideration by the practitioner in the present state of science.

The question arises at once; why does the above plan have no room for hemoglobinometry, this decidedly best known and most popular "clinical" method of blood examination? The answer is: simply because hemoglobinometry is without any practical value for the physician. This dictum may appear little credible to many, because in the hematological chapters of all clinical text-books hemoglobinometry takes the first place up to the most recent times, in fact, the prominent investigators continually invent new instruments for the colorimetric determination of hemoglobin. This can only be explained by the fact, that the recent fundamental discoveries which prove the uselessness of hemoglobinometry for practical medical purposes, are, unfortunately, too little known or are disregarded.

This is not the place to dwell explicitly upon the cause on which depends the uselessness of the colorimetric determination of hemoglobin* in medical practice. But it is a fact that the physician, if he wants to make use of the hemoglobinometer, really does not learn more than he can find by the usual methods of examination of the patient, *i. e.*, he will draw the same erroneous conclusions regarding anemia to which he is led so frequently on account of the shortcomings of the general clinical methods of examination, and this is done, because he has to acknowledge each decrease of the values of the hemometer as a proof of an existing anemia; however, such a decrease does not prove this at all, just as little as it proves a decrease of hemoglobin.

It has long been known that the hemoglobinometers now in use (von Fleischl or Gover's) are not reliable instruments, and therefore it was advised to reject them for scientific purposes. In the clinic, however, where it is alleged that no accuracy is required, they were supposed to prove of advantage as practical apparatuses and easily handled. It has been demonstrated by controlling experiments (Dehio and his disciples) that, besides subjective errors, the colorimeters are inclined to show too low values when examining oligochromemic blood; and the error grew with the increasing oligochromemia. Therefore, correction-tables were made which, however, are no remedy. The principle of colorimetry is not wrong at all, provided the homogenous is measured by the homogenous; the more staining material in the solution the more intense or darker will be its stain; and *vice versa*; the increase of the staining-intensity means the increase of the staining-quantity, provided that a simple parallel exists between both manifestations.

Unfortunately, the above principles cannot be com-

*In order to avoid misunderstandings I wish to emphasize here that I always mean by "hydremia" only the excess of water in the blood, in toto, and not only the excess of water of the serum, for instance, which some authors do.

*In relation to morphological blood examination, cfr. the similar expressions of Lazarus in his work on Anemia (Nothnagel's collection.)

*For particulars compare: Biernacki, Investigations of the Chemical Constitution of the Blood in Pathological, Especially Anemic, Conditons. Zeischr. f. klin. Medicin, Bd. XXIV, 1894, S. 460. On the Chemical Constitution of the Pathological Human Blood. Wiener med. Wochenschr., 1893, No. 43-44. E. Grawitz. On Hemoglobinometric Methods of Examination and Their Significance for Clinical Purposes, Allgem. med. Centralztg. 1895, No. 19-20. C. H. Meyer, The Sources of Errors in the Hemometric Examination, Deutsches Archiv f. Klin. Med., Bd. LVII, 1895. Exhaustive Report. J. Schnuerer. The Physical Finding of the Blood in its Dependency upon Healthy and Diseased Organs of Circulation, Centralb. f. allgem. Pathologie und pathologische Anatomie, 1899, Nos. 8 and 9.

plied with in the examination of human blood by means of the hemoglobinometers. They contain a stained wedge (von Fleischl) or a stained solution (Gower's), and such like, in their construction, and are originally intended for the quantitative determination of only a certain pigment solution (for instance, oxyhemoglobin). The blood *in toto*, however, is not a solution of *one* pigment only, but as a rule contains two labile bodies entirely different in color, like oxyhemoglobin and hemoglobin, and also other blood pigments (so-called osmazome), which in their turn may influence and modify the state of blood coloration. If the hemoglobin is more prevalent, the more intense or darker the blood will show —therefore *more* blood pigment; if, however, the blood contains more oxygen, the brighter it will appear—therefore *less* pigment.

These are no purely theoretical contemplations. They are amply proven by practical experiences. Thus, several peculiar occurrences, which happened during the use of the colorimetric hemoglobinometers could not be explained in any other manner than the above. For instance, it is known to all who use this apparatus, how frequently the staining character of the blood to be examined will not match that of the examining wedge, and it will always be so when two heterogenous pigments are to be compared (for instance, solutions of eosin and carmin). Oertel[1] concluded upon great territorial differences in the composition of the blood, after he had hemoglobinometrically examined lighter and darker blood from the finger ends; however, the territorial differences in the condition of the blood belong to the domain of the unavoidable errors of examination. Stintzing and Gumprecht[2] frequently found, when examining blood deficient in oxygen (therefore darker), in heart defects overnormal Hb-values, although the blood was hydremic and, surely, not infrequently more oligochromemic than normal. Much more important for the practice is the fact that the heglobinometer is very apt to register a decrease in quantity of Hb, therefore an anemia, if the blood with normal quantity of pigment for some reason or other happens to become lighter than normal. Thus one frequently finds, by means of the heglobinometer an anemia in neuropathics, while in reality anemia exists but rarely in these patients.[3] The eventual discrepancy between the actual amount of blood pigment and the (reduced) hemometer-values has been proven by direct experiments, in which the Hb quantity was measured according to the most reliable method at our disposal at present (quantitative determination of iron after the weighing method).

It has been tried to eliminate by different methods the fundamental mistakes of the colorimetric blood examination; F. Hoppe-Seyler has constructed an apparatus in which the blood to be examined is charged with CO and afterwards compared with a known solution of CO-hemoglobin; hence the homogenous determines the homogenous here. But on account of its circumstantiality it was not possible to adopt this method even in the clinics.

It is not my intention to contend that the colorimetric apparatus does not possess any value at all. A *great* decrease of the hemometer values probably always proves the presence of hydremia and oligochromemia; I also willingly admit that in quite a number of cases the actual amount of blood pigment coincides with the results of the hemometer; but the point is, that we do not know in advance when this will be the case. But not everything depends upon this. Even if, in the course of time, absolutely unobjectionable colorimetric methods are invented, they will hardly regain an important position in the future, for the principal reason that the centre of gravity of the present hematological conceptions has gradually moved in an entirely different direction. Until quite recently the decrease of hemoglobin in the blood was considered the most essential change of the blood, and the meaning of anemia was tacitly identified with the meaning of oligochromemia, but this view is now gradually losing its supports. Before all, it is certain, that in human pathology there is no isolated deficiency of hemoglobin of the blood—as might have appeared formerly; if the decrease of hemoglobin is once present, it is only a partial manifestation of quite a number of quantitative chemical blood changes which on their part should be of significance for the pathological constitution of the blood. It is true we know much less of the physiological part of hemoglobin than of a blood potassium or a blood phosphorus, the quantity of which also (and more distinctly) decreases with the decrease of blood pigment. But under no consideration must we place hemoglobin in the foreground, because the study of the functions of the pathological human blood does not furnish any support for the presumption that the deficiency of hemoglobin should be further considered the causative affection of the anemic blood and of the organism. On the contrary, it was discovered, at first with the greatest surprise, that the absorption of oxygen and the elimination of carbonic acid may take place undisturbed even with the gravest oligochromemia; there are, furthermore, plenty of direct indications that the oligochromemic blood is able to absorb quantities of oxygen which differ but slightly from the normal, and sometimes reach normal.

For all these reasons I have not used a hemoglobinometer for the last four or five years, neither in scientific nor in purely practical examinations of the blood. Instead, I directed my attention in pathological studies as well as in practical diagnosis, to the determination of the amount of water in the entire blood, which alone, with our present knowledge, can serve as an indicator and standard of anemia in which practical medicine is most interested of all pathological changes of the blood. I cannot possibly here reiterate the reasons for this decision, and refer to my former works on blood: it is essential that the increase of water in the blood is to be acknowledged as the initial anemic change

1. Oertel, Contributions to the Physical Examination of the Blood, Deutsch Archiv f. klin. Medicin, Bd. L, 1892.

2. Stintzing und Gumprecht Amounts of Water and Dry Substance in the Blood in Health and Disease, Deutsch. Archiv. f. klin. Medicin, Bd. LIII, p. 265-302.

3. In my treatise of 1894 I was still of the opinion, that the brightening of the blood, consequently also the decrease in the values of the hemometer, always means the increase of the amount of water in the blood, i. e. anemia. In keeping with these views I mentioned in the essay on chlorosis of 1897 (for the quotation see later) the "frequent" existence of anemia in neuropathics which has been proven since to be wrong.

of the blood.[1] There exists, also, a certain, although not a strict parallel between the increase of water on the one hand, and the decrease of Hb, P and Ka, also of the Na-increase on the other. In this manner is hygromometry at the same time a certain indicator of the conduct of the blood pigment for those who mean to unconditionally adhere to the determination of Hb.

The objection may be raised against this method of examination, that for the practitioner it is not a simple and easily accomplished procedure, as chemical scales are indispensable for it. Unfortunately, this cannot be helped; in comparison to former times practical medicine also requires a well-equipped laboratory nowadays. Otherwise hygremometry is a simpler method than the blood count. I proceed after the example of Stintzing and Gumprecht[1] to take 0.5-1 cm. of blood from the finger tip and place it on a previously weighed (chemically) watch-glass: then quickly weigh it; dry in the exsiccator over sulphuric acid to the constant weight, and weigh the dry residue again. Knowing the weight of the blood used, after deducting the weight of the watch-glass, and also that of the dry residue, the percentile proportion of the water is calculated according to generally known formulas. The drying in the exsiccator does not take more than 24 hours, as a rule; if a quicker result is desired, the watch-glass is placed into a thermostat with a temperature of 100-120° C. for one and one-half to two hours, and then into the exsiccator for one-quarter to one-half of an hour. In the latter case the figures may not be always quite as accurate as in drying over sulphuric acid; in this procedure the accuracy goes to centesimals, allowing for the loss of water (through evaporation) during the weighing of the fresh blood. Owing to such a mathematical objectivity neither the colorimetric hemoglobinometry nor the indirect determination of the amount of water by means of determination of the specific gravity can compete with hygromometry.

The same method may be used in scientific blood examinations, of course, in such cases in which no large quantities of blood are required. According to former views it was permitted to use only the blood of larger vessels, for instance, of veins, in such cases; but after becoming convinced that the "capillary" finger blood does not show any special differences of composition, in comparison to that of larger trunks, the above rule is not valid any more.[2] Only "genuine" blood is to be examined; this is obtained best by not making a prick, but an incision in the finger tips by means of a lancet which is wrapped to the point in cotton. In this case it is not necessary to squeeze the finger, which might cause an admixture of tissue lymph, but the blood flows freely without pressure.

The importance which may be due to hygremometry in practical medicine is shown by the following statistics which I collected from 75 patients of clientele belonging to others and referred to me during the last three years for blood examination. The number may appear too small, but it is only a part of my examinations, as a great many of my notes were lost, I am sorry to say; furthermore, it seems to me that the material of others is most demonstrative for the following explanations, because the personal-subjective conceptions of the clinical picture are not in question here at all. If I wanted to add my own observations, the statistic would grow to several hundred cases. The final results are always the same.

I examined almost all the 75 cases hematologically on account of the anemic appearance, or on account of anemia diagnosticated either by the patient personally or by his physician. Against this clinical conception, "anemia" could be confirmed in scarcely 27 cases by the examination of the blood—consequently only in 36% of all cases. Among them were three cases of pernicious anemia, two of pseudoleukemia, 13 pronounced chloroses and only seven milder hydremias (about 19% of dry substance). In the remaining cases a normal amount of water, sometimes even a thickening of the blood, was demonstrated.

I believe that the negative result in the latter cases could appear quite unlikely to my colleagues, because according to the external clinical signs an "anemia," in regard to the women a "chlorosis," frequently presented itself beyond doubt. Such a discrepancy between the results of the clinical and the hematological examination would have appeared scarcely credible to me years ago, especially in view of the fact that in such cases a confirmation of the "anemia" by the hemoglobinometer can frequently be accomplished. But the fact that with a decided anemic appearance and "anemic disorders" the water in the blood (also the number of blood corpuscles) may be found to be quite normal, has been noticed by others also (for instance, Stintzing and Gumprecht). As yet it seems to be very little known among the practitioners, less than it deserves according to its great importance. It is well known that "anemia" is still one of the most frequent affections for the modern physician; how many things are ascribed to the "anemic foundation"! Nervosity and headache, gastralgia and pharyngitis, etc. —Everything is called "anemic," if one sees at the same time a pale skin and pale mucous membranes. Accordingly no medicine is probably prescribed oftener "for rational reasons" than iron.

The above mentioned 36% of hematologic anemias prove that the "anemic foundation" does not exist as often in medical practice as has been supposed up to the present time, and that the conception of anemia must undergo a change. Naturally, the question arises at once, whether, in spite of normal percentile constitution of the blood, it is permissible to preclude anemia so unhesitatingly? It may be that the paleness of the skin and of the visible mucous membranes are, in this case, caused by the fact that the vessels contain too little blood, *i. e.*, a decrease of the total quantity of blood exists.

To this question a positive answer can be given, although we have no method to determine the total amount of blood in the living. According to anatomo-pathological experiences one has to actually

1. Compare principally my essay: Contributions to the Pneumatology of the Pathological Human Blood. Zeitschrift f. klin. Medicin. Bd. XXXI u. XXXII. 1897. S. 105-111 of the separate edition. Conclusion of the work. Also: On the Conception of Disease in Chlorosis, 1897.

1. 1. c. page 267.

2. Compare J. Schnuerer, 1. c. page 340.

acknowledge the existence of oligemia, but only in traumatic, pernicious, carcinomatous, and, sometimes, possibly, also, in tubercular anemia; the emptiness of the vessels and the small quantity of blood in the parenchymatous organs strikes us most constantly in pernicious anemia, in which the blood is very hydremic at the same time. In all these conditions the oligemia is manifest during life by the fact that in spite of deep tresis it is very difficult to draw a sufficiently large drop of blood out of the finger tip. Nothing of the kind, however, is found in the pale patients with a normal amount of water in the blood; on the contrary, the blood often flows so copiously out of the wound, that it creates the impression of a polyemia, like in chlorosis.

It is well known that neither plethora nor oligemia can be easily created experimentally; the dilution of the blood after hemorrhages is caused by the property of the blood, that it endeavors at once to regain its original total quantity and draws the juices of the tissue into the vessels.[1]

In short, it is not possible to count those pale individuals with normal percentile amounts of water in the blood as "anemics," *i. e.*, to include them in that class of diseases which embraces chlorosis, pernicious anemia, leukemia, and possibly several other idiopathic hydremias, which are but very little or not at all known as yet. But, nevertheless, a new question may now arise: is there any practical sense to differentiate between these "non-anemias" and genuine chlorosis, etc., if the therapeutic indications and results remain the same in both cases?

Here the question of iron-therapy comes into consideration. With application of the hematological control everybody may quickly convince himself that the pale patients with whom iron agrees but poorly or not at all (without reference to secondary anemias) have normal blood composition. It is a long time since this coincidence appeared remarkable to me; in some of the patients referred to me the blood examination was caused precisely by the fact that they had repeatedly used iron, but remained as pale as before. Now most of them stated that it did not agree with them at all, causing indigestion, and at the same time had but very little or no therapeutic effect. In the same manner later I never failed to find the normal amount of water in the blood in all those doubtful cases in which iron was recommended without blood examination and did not agree with them, when afterwards I applied the hematological control. At present I doubt very much whether anybody is able to present a demonstrable case for the usefulness of the iron-therapy in such conditions—apart from a purely subjective improvement, depending upon suggestion.

The numerous "easily digestible" iron preparations which lately made their appearance upon the pharmaceutical market exist precisely on account of these "chronic, obstinate" anemias with normal composition of the blood, as I fully understand now. They are absolutely superfluous for the treatment of genuine chlorosis, because I scarcely remember a single case in which the most common anorganic iron preparations were not perfectly assimilated. As is proven by the recent observations in my wards by Dr. Laskowsky, such a simple preparation as ferrum hydrogenio reductum (without arsenic) may, in increasing doses (0.4-1g. per day) with rest in bed effect the regeneration of the blood after two weeks in many cases of chlorosis.

Generally rest in bed and iron are sufficient in even the severest attacks of chlorosis to cause recovery. Any more energetic interference, like hydrotherapy, gymnastic exercises, are not necessary; in fact, injurious. In pale patients with normal blood, however, an undeniable improvement may be frequently accomplished with these therapeutic agents. The noted advertisement on thalassotherapy---the anemia, which is quoted in all therapeutic text-books, owes its existence, I believe, only to the favorable results which are obtained by the treatment of such pale patients at the seashore. Medicinally, something might possibly be accomplished for them by the use of arsenous waters.

This being the case, is it not possible then to distinguish genuine anemia from the above pseudo-disease by means of general clinical signs, without resorting to the troublesome blood examination? In quite a number of cases this is quite possible, namely, in distinct chlorosis with white-yellowish skin, strong anemic heart sounds, etc. The diagnosis does not present any difficulties in these cases even without blood examination. The determination of the water in the blood then only announces the degree of hydremia about which the general clinical symptoms cannot give us any positive information. On the other hand, the pale patients with normal blood look less pale than emaciated, and no heart sounds can be heard in them. If all these points are properly observed, the latter patients will scarcely ever be called "anemic." But the practice in this respect is gained by the blood examinations; if the divergency between the pale appearance and the unchanged condition of the blood is noticed frequently, then the often so pronounced paleness of the mucous membranes in these cases will not forthwith impress the physician as proof of anemia. And yet---although my personal experience counts several hundred of hematologically examined cases—in quite a number of patients I do not venture to decide without blood examination whether a pale appearance hides hydremia or not. In these cases it is principally the question of hydremias of lesser degree with neither yellowish skin nor heart sounds, and which sometimes look better than patients with a normal amount of water. In my wards I sometimes introduce to my colleagues two patients one of whom is an improved but not yet recovered chlorotic, who looks normal compared with the other pale one of the same age, who, however, is not hydremic at all. Regarding chlorosis itself I will say that if the majority of cases of this affection present a typical appearance, there are patients—certainly not frequently—who suffer from a (according to the hematological control) severe chlorosis, which quickly improves with iron treatment, and yet they do not show either heart sounds or the white-yellowish skin. This is most apt to occur, if the affection

1. Compare also the reasons which R. von Limbeck mentions in favor of the above opinion, in his book: Sketch of a clinical Pathology of the Blood, Jena, 1896, pages 66-68.

develops in the more mature age, of which I have an instance among the mentioned 75 cases.

Concerning the pale individuals with normal amount of water in the blood, on the other hand, their appearance may in many cases present a great similarity with genuine chlorosis, in fact even with pernicious anemia. Contrary to the ordinary condition some cases of this kind show quite a cushion of fat. a bloated face and the paleness of their skin presents a tinge of yellow. Many of them are at present considered as ',anemic adiposity."

In such a manner everything culminates in the fact, that, except in a pronounced chlorosis, the examination of the blood for the amount of water should not be omitted in any case of pallor. It is true, often it might not be worth the trouble, as the anemia, contrary to clinical expectations, will not be confirmed. With these cases it is similar to the urinalysis for albumin or sugar; sometimes a diabetes or a nephritis is discovered, where no clinical signs have apparently been present. In the same manner it is sometimes possible, against expectation, to demonstrate a hydremia by means of the blood examination, whereby the clinical complex symptom may also be correctly explained.

Besides in the cases mentioned, the complete blood examination is to be made, for the above reasons, in severe anemia occurring in the mature or advanced age. Concerning chlorosis, if in this disease the blood examination is not indispensable for the diagnosis, in another respect is hygremometry very advantageous, in fact, it cannot be dispensed with. It is a fact which I often experience in my division, that a case of chlorosis, improved with iron treatment, shows absolutely no more subjective or objective symptoms, the patient feels well and capable to work, while the blood still appears hydremic. Without determination of the amount of water it is actually impossible to decide whether the case may be considered as recovered or not. No case can be considered normal as long as it shows hydremia; the blood examination may also be the means to find out how long the iron therapy is to be continued. It should not be discarded until the water of the entire blood has reached the normal again, irrespective of subjective and objective symptoms.

These rules are based upon the indisputable fact, that the normal amount of water in the blood *in toto* is a strictly defined quantity and, similar to the normal temperature of the human body, fluctuates only within very narrow limits. One does not find less than 21.0 to 22.5% of dry substance in the total blood of healthy adults.

Unfortunately, this fundamental fact is as yet very little known and acknowledged; of the hematologists E. Grawitz[1] is the only one, as far as I know, who has positively declared in favor of this view. Otherwise even the most recent text-books give, as of old, very wide limits—17 to 22%—as normal. I have tried to explain elsewhere[2] the cause of such erroneous views; but everybody may easily convince himself that they are absolutely wrong, by successive determinations of the water in the blood in convalescents after affections which generally cause hydremia in which may be included many infectious diseases and chlorosis. Stress is also laid upon the fact that as yet I have not noticed a more plentiful amount of water in the female blood compared with that of men. The statement of 21 to 22.5% therefore includes the normal for male and female.

It is of the greatest importance to agree upon this standard, because upon it depends in every respect the entire value of the hygremometry and the diagnosis of anemia in the hematological manner. Only in acknowledging a strictly defined standard the decision becomes possible, at which point the anemia commences. This is very important again, because until now into "anemia with normal blood findings" were included a great number of cases which undoubtedly were hydremias (cases with 18 to 19% dry substance in the entire blood). As hydremic, *i. e.*, anemic, however, at present every patient is to be considered with less than 20% dry substance, immaterial whether he presents very or little pronounced clinical symptoms of anemia at the time, respectively whether he does not render himself conspicuous by the paleness of his face and mucous membranes.

The latter remarks may cause some doubts to the render. Is then every hydremia (*i. e.*, thinning of the entire blood) to be considered as "anemia" in every instance? Possibly a differentiation is necessary here, inasmuch as only those hydremic cases should be considered "anemic," in which the dilution of the entire blood is conditioned by and commences with the dilution of one of the morphologochemical blood components. It has been noticed now and then, that the dilution of the entire blood has been caused in one case by the increase of the amount of serum in the plasma, in another by the increase in the red substance.

To this one may answer that at present there are no certain supports for such a differentiation, and it is doubtful whether, even in future, the setting up of different forms of hydremia against the hydremia of the entire blood will be very successful, in vew of the fact that blood corpuscles and plasma should not be considered strictly distinct blood components any more; the plasma appears to be rather the secretion of the blood corpuscles substance.[1] Accordingly, I became convinced that the conduct of the entire blood alone should be considered as determining and decisive both in pathology and diagnosis. Even if in the course of time some hydremias of the entire blood will be excluded from anemia, this will scarcely change anything in the rules laid down above: then it will be still less permissible to diagnosticate pale patients as. anemic, as is the case according to the view defended in this paper.

But to return to the point at issue. If a dry residue of less than 20% of the entire blood is demonstrated in a patient (consequently an anemia),

1. E. Grawitz, Recent Views on the Origin of the Symptom Complex of Chlorosis, Fortschritte der Medicin, 1898, No. 3. The same, The Methods and Significance of Blood Examinations for the Practice. Separate edition from the "Heilkunde."

2. On the Conception of Disease of Chlorosis. Wiener med. Wochens., 1897, No. 8 ff. In this work the importance of the slighter hydremias is not yet defined as precisely, as is the case in the present paper later on.

1. Blood Corpuscles and Plasma in their Mutual Relations. Biernacki, Wiener med. Wochenschrift, 1894, No. 36, 37. Zeitschr. f. physiol. Chemie, Bd. XIX, 1894, u. Bd. XXIII, 1897. Comp. also the text-books of E. Grawitz, R. Neumeister, O. Hammarsten and others.

unfortunately this does not solve all. On the contrary, then sometimes diagnostic difficulties may arise which cannot be solved hematologically. But this is possible only in the case if a hydremia of a lesser degree (18 - 19% dry substance) is met, especially in young girls. If this occurs, the question cannot simply and boldly be answered with the decision: "chlorosis." Because high degreees of hydremia most frequently belong to typical chlorosis: chlorotic hydremia is to a certain extent characterized by this fact, as the secondary anemias in nephritis and tuberculosis are but rarely accompanied with severe dilution of the blood. A chlorosis with lesser degrees of hydremia may also take an undoubted course; I have personally observed such cases; but certainty is only gained after the termination of the case. On the other hand, it is possible that milder cases of hydremia may be brought about by poor hygienic conditions, insufficient nourishment with hard work and such like. If all these circumstances are precluded by the examination of the patient, it must not be forgotten (especially in only one examination of blood and patient) that a slight hydremia in a girl who looks "anemic" or "chlorotic" may *also* be the expression of another disease than "slight" chlorosis. If nervous complaints are made, one is certainly at once ready to ascribe everything to "nerves." We shall very soon see to what extent such an opinion is justified. It is much more important, however, that a mild form of hydremia may conceal a latent tuberculosis, as a few cases have taught me.* For this reason it is necessary that such a blood finding instigates the physician to a renewed and careful examination and observation of the patient. It is true, the pale appearance with hydremia as an expression of tuberculosis, without synchronously demonstrable local changes, rises of temperature, etc., does not occur very frequently. Another point to remember is that the decision between chlorotic and tuberculous hydremia cannot possibly be brought about by the so-called chlorotic blood formula. as it is well known that the latter (not or very little changed number of blood corpuscles outside of reduced amout of dry residue) is just as apt to be present in tuberculosis as in chlorosis.

All the above explanations are to be amended by the express remark that if the amount of water of the entire blood is at present to be the indicator and scale of anemia, yet at the same time it should not be considered as the scale for the health of both the entire organism and its blood. It actually occurs sometimes that, owing to the powers of accommodation and compensation, the amount of water of the entire blood, as well as the number of red blood corpuscles may remain normal, in spite of, for instance, a chronic tuberculosis or nephritis. Thus only the positive results of blood examinations prove of great value in the directions discussed, while the negative ones, which exclude anemia, do not in themselves prove, that the blood is entirely normal.

The latter presumption could not well fail to appear in view of the fact that, although in many pale individuals the water in the entire blood has not increased, and consequently anemia is to be excluded, yet various blood changes are frequently noticed in them, the physiologo-pathological meaning of which is but little understood for the present, but which even now can be used for some conclusions. Thus, in spite of normal (even decreased) water, frequently a peculiar brightness of the venous (also of the finger-) blood can be demonstrated; then the blood from the veins is scarcely different in color from arterial blood, creating the impression that an artery has been punctured instead of a vein. This brightness also partly explains the pale skin of the patients; on the other hand this may cause the decrease in the hemometer values, *i. e.*, the apparent oligochromemia. Furthermore are noticed fluctuations of the fibrin (increase or decrease), at the same time changes of the sedimentation velocity, etc.

Most interesting is probably the fact, that in quite a number of cases a considerable increase of the blood corpuscles (hyperglobulia, *i. e.*, polycythemia) can be demonstrated, so that insetad of the normal five millions in one cmm., there are six, six and one-half, even over seven millions. It is to be emphasized, that this symptom also occurs in those patients, who never were under the iron treatment.

Under such circumstances the hyperglobulia will undoubtedly appear very paradoxic and little likely to many, particularly to those who still identify anemia with a decrease of the red blood corpuscles. But, besides other blood anomalies referred to, it is of great importance, because thereby another point is gained for that view which one forms, by reason of the entire picture of the disease, in relation to the pathological category of the pale patients with normal amount of water. The totality of the clinical (mostly subjective) symptoms of these "anemics with normal blood finding," however, does not represent anything else than the hystero-neurasthenic syndrome; after exclusion of other diseases the diagnosis cannot be anything else but hystero-neurasthenia, or a general neurosis. These pale patients actually do not differ—aside of their paleness—materially from the "plethoric" hysterics and neurasthenics. The latter again do not differ from the former in relation to the condition of their blood; here, too, the absence of hydremia, sometimes even a slight thickening of the blood, anomalies of the blood sedimentation, fluctuations of the fibrin, eventually with a pronounced brightness of the venous blood, and finally a not insignificant hyperglobulia are conspicuous.

The first to call attention to the occurrence of hyperglobulia in hysteria and neurasthenia was Luxenburg,[1] who took as starting point in his systematic blood examinations in functional neuroses the total clinical picture (without reference to the color of the skin). His investigations were almost exclusively made on venous blood, obtained by puncture. By determinations of the water in the entire blood Luxenburg demonstrated, in opposition to former investigators, who, by reason of hemometric results, counted about 70% anemics among the neuropathics, that, in spite of external signs, anemia

*Very interesting in this respect are the results of E. Grawitz, who constantly observed dilution of the blood in the initial stages of tuberculosis, while in the developed cases taking a chronic course blood corpuscles frequently proved to be normal.

1. Luxenburg, Contributions to the Hematology of Functional Neuroses. Centralblatt fuer innere Medicin, 1899, No. 21.

does not belong to hystero-neurasthenia. Among 40 cases examined, Luxenburg could actually demonstrate the decrease of the dry substance to 15.84% only once, in a woman, 30 years of age, and in four other cases to about 19%. In the other 35 cases the blood showed sometimes, besides hyperglobulia, a slight decrease of water.

In the course of the last three years which have elapsed since the publication of his first reports, I have been able to confirm all the results of Luxenburg in several dozens of specially examined cases (finger blood, and partly that of veins). Therefore, I fully join the view of this investigator, that the syndromes of hystero-neurasthenia with hydremia must not be considered "pure" cases, *i. e.*, if, besides hystero-neurasthenic symptoms, a hydremia is found, the neurosis is only a secondary manifestation. In the hydremic cases of Luxenburg, agents, like abortion, hemorrhages, chronic endometritis, could actually be elicited, which were very apt to cause a hydremia. An apparent idiopathic neurosis with severe hydremia in a more mature woman may simply be a retarded chlorosis.

Principally on account of the absence of anemia in most cases of general neuroses, special stress has been in a former place laid upon the fact, that in the demonstration of a mild hydremia not everything should at once be traced to the "nerves."

The aggregate of the blood changes which are so frequently conspicuous in functional neuroses, has become the starting point for the supposition that these pathological conditions are no primary "nervous affections," according to their nature, but secondary syndromes in consequence of a primary disturbance of oxidation in the organism, and the effect, conditioned thereupon, of the injurious oxidation-products on the central nervous system. Hysteria and neurasthenia should therefore be affections of the same character as diabetes, gout, morbid adiposity, and, in general, pathological conditions which depend upon abnormal processes of oxidation in the organism.[1] It may be remarked incidentally that in acknowledging this theory there are no physical objections left to range among the nervous, the "anemics with normal blood finding," in whom the vegetative character of the affection is most conspicuous.

The demonstration, on the other hand, of various blood changes in functional neuroses is in itself absolutely no proof that blood anomalies are the cause of these conditions. Hystero-neurasthenia, especially, should not be brought into causative connection with hyperglobulia and that, because this manifestation is not a constant one; it is true that hyperglobulia frequently accompanies it. If one counts polycythemia from six millions blood corpuscles in one cmm. on, then it was present in 30-35% of all cases of Luxenburg and of mine; if over 5.5—5.6 millions are considered above normal—the percentage is about 50%.

Consequently, hyperglobulia must only be considered as a symptom, the consequence of an as yet unknown, deeper cause. At the same time it is not a specific "nerve-symptom." Without reference to an increase of the blood corpuscles in cholera and disturbances of the circulation, this change in the blood can also be demonstrated in diabetes, under the influence of mountain climate, finally in intoxications with carbonic acid[2] and phosphorus. Nevertheless, nervous hyperglobulia, like every other nonpathognomonic symptom, can be made of practical use, because it is an exact, objective symptom.

In most cases the increase of blood corpuscles will be entirely superfluous for the diagnosis of hysterio-neurasthenia, because every experienced physician will succeed without difficulties to make the diagnosis for general neuroses by means of the so far known symptoms. But it is well known that there are cases of hysterio-neurasthenia that take a peculiar course, and that with symptoms, like attacks of chills, followed by perspiring which may arouse the suspicion of an occult infection, for instance, an occult, "obstinate" malaria. All investigators of malaria emphasize the fact, that this disease, like streptococci and staphylococci infections (pyemia, articular rheumatism) forms a strong poison for the red blood corpuscles; their number generally drops to one-third or one-half of the normal after a few attacks, and this goes hand in hand with the development of hydremia. My own observations proved the same. The severe disintegration of the red cells distinguishes malaria to a certain extent from typhoid fever, pneumonia and many other infectious diseases which are generally accompanied with insignificant blood changes as to the amount of water and the number of blood corpuscles. If in an obscure case of neurosis (without rise of temperature) no *plasmodia malariae* are found, especially after repeated examinations, but instead hyperglobulia, or even the normal amount of blood corpuscles, then I believe that malaria may safely be excluded.

Hyperglobulia may also be of importance in legal medicine, specially to determine simulation (accident neuroses). Unfortunately not all cases of this kind can be decided by the blood examination, because, as mentioned, polycythemia can be demonstrated in about one-half the cases only. But if hyperglobulia is repeatedly demonstrated in an individual suspected of simulation, with eventual absence of other affections accompanying this anomaly (heart defect, emphysema, etc.), there can be hardly any more doubt that the person is not healthy. As yet there is no possibility of simulating hyperglobulia, respectively to artificially produce the same.

Some years ago I proposed for the latter purpose spontaneous blood sedimentation as a new method of examination. O. Müller and Grawitz could confirm its value as to pathologo-scientific examination. Regarding the practical purpose they call attention to technical difficulties and uncertainties. I willingly admit that the sedimentation method is not quite as simple as it appeared to me at first,

1. Compare my paper: On the Etiology of Functional Neuroses (Hysteria and Neurasthenia). Neurologisches Centralbl., 1898, No. 6. Further contributions to this theory, based on the investigations on glycolysis, I give in the paper: Observations on Glycolysis in Pathological Conditions, especially in Diabetes and Functional Neuroses. Zeitschr. fuer klin. Medicin, Bd. XLI, p. 332. According to the results of the latter paper the conduct of the hystero-neurasthenic blood may be characterized as "state of defibrination."

2. In regard to carbonic acid see Limbeck's "Pathology of the Blood," p. 234. Also A. Latham, On the Knowledge of the Blood Changes in Carbonic Acid Intoxications. Wiener klin. Rundschau, 1897, No. 5. Very interesting is the fact, that in functional neuroses, the auto-intoxicant character of which one presumes, the same manifestations regarding the blood corpuscles occur as in carbonic acid intoxications.

and that there is a great deal of latitude as to subjectivity. For this reason the count of the blood corpuscles must be considered as of greater value for the purpose referred to than spontaneous blood sedimentation.

It may also be presumed that neurotic hyperglobulia may be of advantage for such a difficult diagnostic question as hysteric fever. I regret that I am not able to give a final answer to this from personal experience, but at the same time I will not conceal that I repeatedly observed the continuance of hyperglobulia also in fever of "material" origin (suppuration) in nervous persons. Therefore, the presence of hyperglobulia cannot at all prove the hysteric character of this fever.

Nervous polycythemia, however, will probably prove very advantageous in another direction. Luxenburg, in his paper, suggested hyperglobulia might be the consequence of vasomotor disturbances which so frequently occur in neurasthenics; through abnormal contractility of the peripheral vessels during the moment of blood examination too much plasma is pressed from the blood tissue outward, which causes more cells to be present in one cmm. Hemoglobulia, therefore, is an artificial product and means no absolute increase of the blood corpuscles in the organism.

However, there is a possibility that just the latter is the case, *i. e.*, that neuropathic hyperglobulia actually exists. Let us try, in the light of the new findings, to figure to ourselves the profuse menses occurring so frequently in hysterics, the epistaxis happening in nervous children and young people, the undoubtedly existing hemoptysis and gastric hemorrhages; the totality of these manifestations is probably most plausibly interpreted to be the consequence of hyperglobulia, or the expression of the compensating activity of the organism which endeavors to eliminate the excess of red blood corpuscles. With such explanations, on the other hand, the hysteric hemorrhages are deprived of their mystic cloak which so completely envelops them at present. The above possibility should be made to take root in our modern specialists who are so much inclined to trace epistaxis or profuse menses to *local* anatomical changes and to combat them with local, mostly surgical interference. Regarding hemorrhages of the uterus I wish to state incidentally that huge figures of blood corpuscles have been observed by me during the climacterium of which they are so frequently characteristic.

The diagnosis of neuropathic pulmonary and gastric hemorrhages encounters great difficulties also with the presence of numerous nervous disorders and symptoms; the suspicion of an organic origin (tuberculosis, gastric ulcer) may possibly never be entirely excluded. The decision may now probably become more certain, if in such cases a severe hyperglobulia is found besides nervous symptoms. Hyperglobulia is not very likely to ever occur in a gastric ulcer which is generally productive of a high-graded secondary hydremia.

This entire question cannot very quickly be answered by a single observer on account of the rarity of neuropathic pulmonary and gastric hemorrhages. I have personally observed a case in my wards, that of a young, robust appearing, neuropathic girl, who, instead of menstruating, was attacked by a copious hemoptysis, every four weeks, which lasted three to four days; during this period over six millions red cells were counted in the finger blood. A similar occurrence I have seen in a case of hemoptysis in a young girl in the practice of a colleague.

For completeness sake a few words may be added on the increase of the white blood corpuscles in a diagnostical respect. As is well-known, this symptom was mentioned by numerous investigators, (1) for the differential diagnosis between croupous pneumonia and typhoid fever, the course of the latter being generally without increase of leukocytes; (2) for prognostic purposes, because pneumonias without leukocytosis are said to terminate fatally. It may be safely contended, that both these opinions have not become common property of practical medicine as yet, principally because the diagnosis of pneumonia but rarely offers difficulties to the experienced physician; and a leukocytosis may occur in typhoid fever in case of complications (suppuration). Furthermore the lethal termination has been not rarely observed in pneumonia even in spite of leukocytosis; on the other hand, many cases terminate favorably without leukocytosis. In general, the pneumonic increase of the white blood corpuscles has gained rather a theoretical-scientific, than a practical-clinical position.

The count of the white corpuscles may be of more advantage when internal suppurations are suspected. It is true the latter do not constantly cause a high leukocytosis; but I was able to demonstrate in several cases high numbers 40,000-60,000 white cells in one cmm. of blood), which do not occur frequently even in pneumonia, let alone in miliary tuberculosis to which it does not belong at all; and which may have to be taken into consideration differentio-diagnostically in regard to the suppurations. Therefore the demonstration of a high-graded leukocytosis may determine the diagnosis of suppuration early; but frequently this may not be successful; because, as far as my personal experiences go, the huge increase of the leukocytes is most likely to occur in these affections when the process has already assumed a pyemic character.

I believe I have demonstrated by the above explanations how often practically important questions can be decided by means of the blood examination—and by it alone. To sum up—besides the old "indications" for blood examination, as suspicion of malaria, leukemia, relapsing fever, etc. —nothing but blood examination can decide whether a pale complexion means anemia or not, whether furthermore a nervous symptom complex is idiopathic or only the clinical expression of a primary hydremia which is but little manifest externally. In almost all such affections the blood examination, especially hygremometry, *have* to be resorted to without fail. With the present state of hematological science their neglect can be considered as the same medical sin as the neglect of examining the

urine for albumin or sugar in a case of edema. I hope that my readers will share this conviction which I have held for a long while.

1. After having handed the manuscript to the editor several papers on blood have appeared in which incidentally some hematologic-diagnostical questions have been touched. Cf.: H. Strauss und R. Rohnstein. The Composition of the Blood in the Different Forms of Anemia, Berlin, 1901. M. Kahane, Chlorosis, Vienna, 1901. O. Schaumann, Pernicious Anemia in the Light of the Modern Toxin Hypothesis. Volkmann's Sammlung, No. 287, 1900.

The Prevention of Ague in Spain.—Dr. Macdonald published in the *British Medical Journal* of September 16, 1899, an interesting note on the mosquitoes found in the part of Spain in which Rio Tinto is situated, and in his thesis presented this year for the doctor's degree of the University of Paris, says the same *Journal* (July 20, 1901), he describes the practical results of his studies of the relations existing between mosquitoes and malaria in that district. He has confirmed the researches which have established the connection of the development of the parasite in the body of the mosquito with the infection of man with malarial fever. The most interesting part of the thesis is his account of what has been done at Rio Tinto to prevent the malarial fevers which are prevalent in that district. Around Rio Tinto *A. claviger* seems to be the chief agent in causing fever. This variety rarely bites during the day, but is very fierce in the evening, the children in the villages suffering terribly from it and from the edema of the face which the bites cause. The larvae of *Anopheles* are plentiful in the small pools in the ravines. These pools are not, as a rule, stagnant, but have a slow current, the water in them being very clear. In the muddy pools which are sometimes adjacent the larvae of *Culex* are found. Algae are often present in the pools which contain *Anopheles* larvae, which are nourished on them, but sometimes the pools contain nothing but sand and stones. The larvae lie parallel to the stones, and are difficult to see, but they are easily detected when they are on the surface of the algae. During the day *Anopheles* are rarely seen in the ravines, because at that time they take refuge in houses, stables, or in holes which protect them from the breeze and light. In order to extirpate malaria from the district the following methods were tried under Dr. Macdonald's directions: (1) Destruction of larvae around the villages for a radius of a kilometre; (2) protection of inhabitants in their houses by closing every opening with wire grating with a very fine mesh; and (3) mosquito nets for individuals. The first method was carried out by (*a*) draining the pools wherever possible; (*b*) filling them with earth; (*c*) throwing into the larger pools with slow currents copper mineral of little value, which produced a solution of sulphuric acid. Some old wells were treated by petroleum every ten days. Dr. Macdonald, to his surprise, found that the attempted destruction of larvae had no success, although carried out with patience and under his personal supervision. It was evident either that some pools had escaped observation, or that *Anopheles* had come from another village situated beyond the kilometre radius. The other method of protecting houses by wire grating and the use of mosquito nets was perfectly successful. Whole families, for the first time in their lives, passed the summer without having fever.

The Treatment of Threatened Asphyxia.—Robert L. Bowles (*The Lancet*, July 6, 1901) states it as his opinion that in cases of drowning, water does permeate into the lungs, and is expelled very gradually and only after a very long time. The Sylvester method alone will not produce relief in such a case. The better treatment would be to let the patient lie on one side at rest, rather than adopt measures which would induce forcible inspiration of air before the evacuation of the water had been brought about. This author believes that artificial respiration, despite its value in certain cases, if employed without judgment becomes a source of increased danger, and he therefore advises the Marshall Hall method.

Abstracts of Therapeutic Literature.

SURGERY.

The Treatment of Tuberculous Coxitis.—Stecchi (*Il Policlin.*, February 16, 1901) reports two cases in which he practiced with success Giordano's method of operating, the chief novelty of which consists in the large primary incision. This is crescent-shaped, with the convexity below, starting from the junction of the middle and external third of the line joining the pubes and superior iliac spine, it proceeds round the great trochanter to the middle of the nates fold. The advantages claimed for this operation are: (1) the greater freedom with which the hip-joint can be reached and thoroughly treated; (2) the absence of certain technical difficulties (largely due to the smaller incision) common to the older operations; (3) the possibility of freely washing away loose tuberculous detritus and infective material; (4) the possibility of establishing complete hemostasis so that no drainage of the wound is necessary. In spite of the destruction of so many muscles as this operation seems to imply, the patients recovered as much power and solidity in their limbs as would have been expected after other operations.

Resection of Hip for Tuberculous Disease with Abscess.—Nélaton's address (*Bull. et Mem. de la Soc. de Chir. de Paris*, tom. xxv., p. 887) before the Surgical Society of Paris on this subject was followed by a long discussion in which very different opinions were expressed. Félizet strongly supported resection, and considers the conservative treatment unsatisfactory. Of 80 patients with morbus coxae, aged from 15 months to puberty, only 9 lived to the age of 20. Of the remaining 71, 20 died from exhaustion, 15 of tuberculous meningitis, many had a secondary infection of other joints, and a large number developed spondylitis. He stated that of 300 resections of the hip for tuberculous coxitis, he had lost 2 only. In his view albuminuria is the only contraindication to operation. He does not wait for abscess or fistula, if the hip is painful, if this pain is not removed by extension and immobilization; or if the patient has fever and is declining in general condition he recommends proceeding to the radical operation.

Early Laparotomy for Typhoid Perforation.—In 1897 Monod and Vanverts, says *Brit. Med. Jour.* (July 20, 1901), were only able to collect from the literature 27 cases in which laparotomy had been performed in typhoid fever. These showed a very small percentage of success, all of them where peritonitis was localized In 1898 Keen collected 83 recorded cases with 19.3 per cent cures, and during the following year to October, 1899, 75 more with 28 per cent. successes. Harvey Cushing (*Archives Generales de Medecine*, January, 1901) states that during the last three years 11 cases from Dr. Osler's wards have been operated on and 5 saved, a percentage of 45.4. This result is attributed to the early stage at which the laparotomy was performed. The surgeon should never wait for signs of general peritonitis before interfering. Preperforative symptoms may often be recognized. Perforation of the appendix gives as a rule definite symptoms early enough for surgical intervention. These cases, however, are excluded from Cushing's list, which deals only with the ordinary ulcer of the ileum. Vomiting, hiccough and increased sensibility and rigidity of the abdominal wall are among the earlier preperforative signs. With these cessation of the respiratory movements of the abdominal wall is a valuable indication. Perforation was not observed in any case where marked meteorism was present. A rapid fall of temperature does not generally occur until the onset of general peritonitis, and is, moreover, a sign of many other accidents, such as hemorrhage, acute obstruction, or rarely a true crisis. Importance is now given to the question of leukocytosis. Thayer has shown that in typhoid the leukocyte count may show no more than 3000 per c.mm. If blood examination, however, be frequently made, a rapid increase of leukocytes (for example, from 3000 to 10,000) has been found a preperforative sign, the number generally sinking rapidly again with the effusion of intestinal contents into the peritoneal cavity. Four cases were operated upon owing to mistaken diagnosis, and are not included in the statistics. In one case, the symptoms were due to diaphragmatic pleurisy

and pneumonia, in another to double iliac thrombosis. The laparotomy had no untoward influence. Chloroform is not without danger and the intra-arachnoid injection of cocaine causes unpleasant after-effects. It has been found enough in the later cases to use Schleich's method of producing local anesthesia, by endermic injection of cocaine. The great danger of waiting for the actual perforation before operating is the liability to streptococcus infection, which proves fatal in a few hours. Streptococci were found in one of the successful cases, hitherto unrecorded, but only in a small proportion to the total number of microorganisms.

The Diagnosis and Treatment of Mastoiditis.—E. B. Dench (*Jour. Amer. Med. Assoc.*, July 27, 1901) in his treatment places the patient in bed with absolute quietness. The food should be liquid and the bowels kept open with a saline purge. Absolute free drainage should be established through the external auditory meatus. This is best done by making a free incision through the drum membrane. The incision should begin close to the posterior periphery of the membrane at a point below the tip of the malleus handle, and should extend upward into the tympanic vault. When the vault has been reached the knife should be carried upward and a little backward so as to sever freely the reduplications of the mucous membrane, which are so richly distributed in this region. The knife should then be drawn out on the upper and posterior wall of the meatus for a distance of at least one-eighth, sometimes one-fourth, of an inch, dividing all of the soft parts down to the bone. This incision serves the purpose of not only draining the tympanum freely, but causes a marked depletion of the inflamed tissues, and relieves tension along the floor of the tympanic vault and mastoid antrum. After such an incision has been made the ear should be frequently irrigated with a warm antiseptic solution. The warm irrigation cleanses the parts mechanically, and also favors the unloading of the congested tissues. A sero-sanguineous discharge frequently persists for twelve to thirty-six hours after the incision has been made. The author thinks that the value of local depletion thus obtained is often underestimated.

A Large Urethral Calculus Extracted by Perineal Section.—E. Loumeau (*Annales de la Policlinique de Bordeaux*, June, 1901, No. 6) reports the case of a man of 44, who had suffered from nephritic colic in the left kidney for 12 years, with the passage through the urethra, of many calculi, varying from a millet-seed to a large pea in size. After a rest of six months, a very severe attack of renal colic occurred, on the left side as usual. This lasted three days, then ceased abruptly. The next day, while urinating, he felt a stone enter the urethra, and the stream stopped. Therapeutic measures failed to dislodge the calculus, and retention of urine folowed. A sound introduced reached the stone, which remained immovable. The bladder was punctured and the urine withdrawn. But this afforded but temporary relief. The next day perineal section was performed, the stone and urine removed, a catheter left in the urethra, and the incision sutured. The catheter was withdrawn on the third day. A week later, the wound had healed. The calculus was as large as a large olive. That the stone lodged at the peno-scrotal angle was probably due to a spasm of the peno-scrotal sphincter, caused by the arrival of the large calculus. For Loumeau asserts that spasmodic contraction of the penile portion of the urethra is just as possible as is spasm of the membranous urethra.

The Treatment of Movable Kidney.—Dr. Bazy discusses the treatment of movable kidney in the *Bulletin Medical* of July 13, 1901. As Dr. Richelot says, this condition is commonly seen in the neuro-lithemic, often without causing any symptoms at all. They are only found by accident, during physical examination. There may be marked gastrointestinal symptoms, and sometimes splanchnoptosis. There is emaciation generally, traumatism occasionally. Bazy believes that the space from the last rib to the iliac spine is larger than normal in people with movable kidney. He believes that the pain is not due to congestion, but to nephritis or perinephritis. When pain occurs, the condition existing is generally nephroptosis. Bazy advises massage and a hypogastric binder, of the Glénard type. When no improvement follows and the pain persists, he does nephropexy, by the "hammock" method. He believes that there are many cases which can only be cured by operation.

The Treatment of Incomplete Ankylosis.—Tillaux says that ankylosis may be complete or incomplete, in *L'Independance Medicale* (July 10, 1901, No. 28). If complete, it may be fibrous or osseous, straight or angular. If straight and of tubucular origin, it should be left untouched. If due to any other causes, resection will rarely benefit the condition, and it had better also be left alone. He showed a case of incomplete straight fibrous ankylosis of the knee. Here, again, if tubercular, leave it untouched. But when due to any other cause, movements and massage are indicated. It is best to give an anesthetic. After the movements, the leg is placed in cotton in a straight splint. There will always be some pain after manipulation, which may have to be repeated. In incomplete angular ankylosis, of tubercular or other origin, the leg must be straightened by manual force. If complete, orthopedic apparatus will be needed. Care should be taken in manipulating the knee joint, as harm may easily be done to the soft parts.

Treatment of Abscess of the Lung.—Dr. James Bell (*Montreal Medical Journal*, May, 1901) reports three cases of abscess of the lung he treated by operation. He concludes: "The abscesses in each case followed a pneumonia, and, judging from the symptoms, probably began as a local gangrene of lung tissue. As one would expect, the abscess communicated with the bronchi, with the result that evacuations of horribly foul-smelling pus, at first more or less intermittent, occurred, and continued until the cavity was drained. In each case there was considerable difficulty about the anesthetic, and in the case exhibited to-night general anesthesia was impossible on account of the filling of the bronchi with pus which interfered with the breathing, and produced violent spasms of coughing. In this case the attempt to administer ether, which was only maintained for a few minutes, kept the patient in a condition of semi-asphyxia and violent coughing for most of the afternoon. In each case the lung was firmly adherent to the chest wall, making the operation almost as simple as that for empyema, and finally the results of draining the cavities were most satisfactory. Localization of the abscesses alone was difficult, the aspirating needle failing to give evidence of pus, even when it had undoubtedly entered the cavity. This is easily understood when one considers that such a cavity is necessarily at times more or less completely emptied by a fit of coughing, and that its contents are, moreover, thick and viscid, containing generally much mucus and some shreddy material (gangrenous lung tissue, especially if the case is a comparatively recent one."

DISEASES OF WOMEN.

Rupture of the Uterus.—Christeanu (*Ann. de Gynec. et. d'Obstet.*, 1900; April, quoted in *Brit.Med.Jour.*, July 20, 1901) reports 3 cases treated by abdominal hysterectomy: (1) 7-para, admitted at term, true conjugate, 9.3 cm. Head in left occipital position, fixed at brim. After eight hours, the cervix being dilated, the membranes were ruptured. No tendency to engagement. Two and a-half hours later, after a hot bath, the pains became more painful, and then ceased. No abnormal symptoms, pain, faintness, or weakness. Fetal heart not heard. No blood from the vagina. Called in the night to put on forceps for the inertia. Cristeanu found a rupture of the uterus at the left lower part. He turned with much difficulty on account of the clinging of the intestines to the legs. A ten-inch loop and some omentum appeared at the vulva immediately after the issue of the placenta; the omentum prolapsed after being returned, and had to be ligatured off. The belly became tender and distended, and vomiting set in. Fourteen hours after the rupture celiotomy was performed. There was a complete tear of the uterus and left *cul de sac*, the left round ligament and uterine artery were torn, and on the right the peritoneum was torn up to the level of the kidney. Total hysterectomy was done, the bleeding points being ligatured. She had first chloroform, and then ether. Drains were put in . Vomiting continued for a day, and there was some pulmonary congestion, but for the next two weeks she did well. The progress was then temporarily disturbed by painful swelling in the right inguinal fossa. Discharged at thirty days. (2) A woman, aged 38, who had eight difficult labors, was, after eleven hours la-

bor, seized with severe abdominal pain, faintness, vomiting, and vaginal bleeding. Admitted to the Maternity, celiotomy was done, the fetus and placenta were removed, and total hysterectomy performed. There was vomiting and tenderness for three days after, but the rest of the convalescence went well. The uterus was torn on the left side, and there was free bleeding into the peritoneum. True conjugate, 9 cm.; albuminuria before the operation. (3) 3-para, with two previous difficult labors. A midwife perforated the membranes, and a doctor called to put on forceps did not succeed, and the patient was sent into hospital ensanguine. The cord was prolapsed and the child dead. Cristeanu turned and delivered the head with forceps. During these operations no blood escaped outwards. There was a rupture on the left, and the placenta was extracted from the abdominal cavity. Celiotomy was done, the round ligament was found torn, and the peritoneum torn in both iliac fossae. The uterus was removed. There was a little sloughing in the vaginal stump. All 3 cases had repeated injections of saline solution. Herrgott (*Idem*, May) relates another case where the patient died of shock. She was at term of her seventh pregnancy, and the waters having broken three days before, she was admitted after forty-eight hours of labor, with the abdomen very painful, the uterus hard, and the left arm prolapsed. Evolution had begun. The dilated cervix was spasmodically contracted on the fetus, and did not relax under anesthesia. Embryotomy was exceedingly difficult, and took two hours. At one point some blood flowed from the vagina, and Herrgott was struck by the appearance of the uterus, which seemed as if divided into two parts, separated by a groove. There was a rupture on the left. In spite of the bad condition of the patient Herrgott thought it best to do a celitomy. He found an irregular tear, and removed the uterus by a Porro operation.

The Oxytocic Effect of the Lumbar Injection of Cocaine, Particularly to Induce Labor.—A. Doleris (*International Clinics*, Volume 2, Eleventh Series, 1901) sums up a paper on this subject as follows: 1. The lumbar injection of cocaine is counter-indicated with pregnant women; if the method were used for the execution of operation during pregnancy, miscarriage might ensue. 2. A new method of bringing on labor has been found in the use of these injections, which have a certain effect on the uterine motor nerves. 3. This process may render great service in case of uterine inertia during labor, particularly with a moderately contracted pelvis, as he has found in two instances. 4. In eclampsia, where rapid evacuation of the uterus is indicated, the lumbar injection ought to be efficacious, and may have a happy effect on the nervous reflex symptoms.

Ovarian Organotherapy.—William Krusen (*Bull. Johns Hopkins Hosp.*, July, 1901) states his experience for the past three years in the use of ovarian extract for cases suffering from amenorrhea, dysmenorrhea, and other pelvic disease, for those suffering from symptoms following the removal of the uterine appendages, and for disturbances associated with the menopause. He concludes: (1) That the ovarian extract is practically harmless. (2) No good results are obtained in the treatment of amenorrhea and dysmenorrhea. (3) The best results are obtained in the relief of artificial menopause. (4) No appreciable results follow its use in the natural menopause. (5) No definite reliance can be placed upon the drug. (6) It is doubtful in those cases where relief was noted, whether this was not due to mental suggestion. (7) Increase in dosage seems to have little influence in maintaining the effect of the drug or in preventing the patient from becoming accustomed to it. (8) The theory of the use of this extract seems to be faulty, and the administration of ovarian extract is based upon a wrong assumption as to the function of the organ. If coincidently with ovulation any peculiar product is formed it has not yet been isolated.

The Treatment of Inflammation of the Uterus and Adnexa with Dry Hot Douches.—A. M. Manswjetow (*Deutsche Aerzte-Ztg.* Nr. 8, 1901). This treatment consists of the introduction of a rubber ball with two tubes into the vagina; into one tube hot water is injected into the rubber ball and through the other tube the water returns, but in a less quantity. The temperature of the fluid should be from 50° to 55° C. and the duration of the application should be from one to two hours daily. The quicker the fluid is injected the more will the rubber ball become distended, and the amount and distribution of the pressure can be regulated according to the extension of the inflammation. The author believes that this method of treatment decreases the pain, quiets the nervous system and causes the exudate to be absorbed.

Carbonic Acid Gas as a Local Treatment for Disturbances of Menstruation.—Loimann (*Wiener Klinische Wochenschrift*, April 11, 1901. XIV Jahr. No. 15) states that in the second half of the eighteenth century, carbonic acid gas was first used locally in the form of baths and douches. Loimann has seen excellent results from its use in the disturbances which accompany menstruation, dysmenorrhœa and amenorrhea. Most of the towns which boast of carbonic acid waters have arrangements for giving carbonic acid gas baths. As the gas penetratec the clothing it is unnecessary to undress. Vaginal douches may also be given. Loimann has devised a practical contrivance for carbonic acid gas douches. The mucous membrane of the uterus becomes reddened, with a great increase in the secretion. Menstruation generally appears earlier and more copiously than usual, after repeated douches of carbonic acid gas. Especially are those women, who show abnormality of the genitalia, successfully treated. Even if the mucous membrane of the uterus be altered, carbonic acid gas douches may cause the appearance of menstruation. It must not, however, be attempted during pregnancy, or abortion will occur.

DISEASES OF THE NERVOUS SYSTEM.

Dietetic Treatment of Epilepsy.—R. Bálint (*Berl. klin Woch.*, June 10th, 1901, an abstract of which appears in *Brit. Med. Jour.*, July 20, 1901) discusses the position of the therapy of epilepsy, and in comparing it with its position at the time of Galen, when valerian root was freely used, he comes to the conclusion that we have not advanced materially towards being able to check the disease. He proceeds to describe a method of treatment which he has carried out in 30 cases. It is based on the observations of Toulouse and Richet that the human organism is more susceptible to bromine when the chlorine in the body has been to a great extent withdrawn. He applied a diet which was practically free from chlorine, and gave bromides with the food. Two of the 30 patients voluntarily broke off the treatment, so that he reports only 28 cases; 9 of these were "fresh" cases, and 19 older standing cases. The diet was comprised of milk (1¾ to 2½ pints), butter (1¼ to 1½ oz.), 3 eggs, and bread (from 9½ to 12½ ozs). This was given without any addition of cooking salt, and he estimates that the contained quantity of NaCl was under 30 grains. The nutritive value was reckoned to be from 2300 to 2400 calories. To the bread he added 45 grains of bromide of sodium, instead of the usual chloride. The effect on the epileptic attacks, he remarks, was extraordinary. At first some of the patients had more frequent and heavier fits, while others immediately showed a diminution of the number of fits. After from 6 to 7 days, every case showed a considerable change. In some cases the number of attacks diminished very greatly, while in others the character of the attack became modified. Violent clonic and tonic spasms were replaced by tremulous movements, by more loss of sensation, or by attacks of giddiness. In seven of the 9 fresh cases, and in 15 of the 19 old-standing cases, that is, in about 80 per cent., the fits ceased altogether during the treatment, while in the remaining 20 per cent. the intensity and number of the attacks were materially lessened. The treatment was continued for thirty-five to forty days. The general condition of the patients improved; almost without exception they increased in weight, and took on a more healthy complexion. There were no signs of bromism present in any of the cases. He found that the bromine taken in replaced the chlorine (chlorides) excreted in almost exact quantities. Dealing with the ultimate results of the treatment in those cases treated for forty days, he noted a recurrence of the attacks, at first mild and infrequent, but later becoming more intense. In one case, which he treated for three months, the fits had not returned up to the time of writing, that is, one month after the end of the treatment. He concludes: (1) A diet poor in chlorine is applicable in every case of epilepsy and worthy of trial. (2) The treatment should

be most successful when carried out in a sanatorium or "home." (3) Until the nature of the condition is fully known, a *strict* "chlorine-poor" diet should be applied. (4) Beside the diet, small doses (33 to 45 grs. per diem) of bromine salts should be given. (5) The easiest and most pleasant method of giving the drug is to let it take the place of NaCl, especially in bread. (6) The beneficial action of the treatment rests on the increased sedative action of the bromides, and therefore it may be useful in other nerve diseases where bromides are at times given.

MALIGNANT DISEASES.

Cancer, Particularly Cutaneous Cancer.—E. M. Alger (*New York Med. Jour.*, Aug. 3, 1901) says the treatment of cancer of the skin requires good judgement. No internal medication has so far proved of any value, nor is there any promise of such medication. To operate, or not to operate, that is the question. In many cases, whether because of the extent of location of the disease or because of the condition of the patient, operation is not to be thought of. It must be borne in mind that a partial operation may frequently be worse for the patient than non-interference. Superficial epitheliomata and those occurring in the very old, are much less in need of active interference, for both are commonly very indolent. On the other hand, growths in the vicinity of active lymphatics should be removed at the earliest possible moment. Removal of tissue for examination is a dangerous procedure for there are many cases on record where, in this as in actual operation itself, cancer cells have been disseminated through previously healthy tissues. Instruments that have been in contact with cancerous tissues are a constant source of danger to the healthy tissues of that individual, till they have been disinfected. This same danger makes the operation under infiltration anesthesia objectionable. In those epitheliomata in which the lymphatic movement has not yet taken place or is not to be dreaded, removed by some caustic will often be consented by a patient who would refuse an operation, and the results ought to be equally good. Arsenic, which has a selective affinity for cancer cells, is to be preferred to chloride of zinc or caustic potash, which cause destruction of diseased and healthy tissues alike. In the caustic treatment, as in others, thoroughness is the main thing, and superficial caustics like carbolic acid and nitrate of silver, often do more harm than good. Arsenic, whether used as a paste or a solution, causes a necrosis of cancerous tissue, and by the inflammatory action excited destroys the low vitality of cancer cells far beyond the range of its actual application; and, in this way, reaches outlying cells which would not be included in an operation by the knife. The resulting wound is a foul one to the eye, but more likely to yield a good result than if it were aseptic. It rapidly fills in with granulation tissue and often gives a surprisingly good cosmetic result. The great drawback about the method is that it has no certain action when the lymphatics are involved. When the lymphatics are actually involved, the knife is the only resort giving any reasonable promise of success. In well-marked cancer where dissemination is taking place, amputation will often in the end prove the most conservative policy; the glands should be dissected out as thoroughly as possible and the danger always be borne in mind of infecting a healthy wound during the process of the operation itself. The inoperable cases must be treated palliatively according to their individual needs, dressed with antiseptics and deodorants, and if painful the lesions must be sprinkled with some analgetic which gives long-continued relief.

Carcinoma of the Nasopharynx.—C. Jackson (*Jour. Amer. Med. Assoc.*, Aug. 10, 1901) classes the treatment under two heads, radical and palliative. Special surgeons favor palliative methods by natural channels, general surgeons favor radical operations with radical preliminary operations to create an artificial channel. The aim of the radical operator is to get the growth out; the palliative advocate, recognizing the hopelessness of thorough removal, aims at comfort. The methods of treatment include the cold snare, cutting forceps, possibly the curette in very soft growths, electrolysis, the galvanocautery, lactic and nitric acids, and possibly some other caustics, local soothing applications, and Chian turpentine internally. Extirpation of the enlarged lymphatics should probably also be included here. Fourteen cases which the author reports in his article afford examples of only the snare, forceps, curette, galvanocautery, glandular extirpation, Chian turpentine and absolute alcohol injections. Radical procedures, of which there are many, vary considerably in technique, but all contemplate the creation of an artificial channel by the resection, temporary or permanent, of more or less of the inferior or superior maxillary and palatine bones.

Is Cancer Curable?—Under this heading A. Adamkiewicz (*Berliner Klinische Wochenschrift*, June 10, 1901) publishes an article dealing with cases treated by cancroin. The editor attaches a foot-note inviting a discussion on the subject, which will be reported in due course. Adamkiewicz says that he has already reported the case which he uses as a basis for the present communication. The patient was suffering from "cancerous degeneration of the worst description of the womb, vagina, and parametrium." The vaginal cervix, he says, had disappeared into a tumor mass, which included the vaginal fornices, and reached over the whole mucous membrane. The vagina was so narrowed that an examination of the parametric tissue was impossible. The process was so far advanced that Albert feared that a perforation into the bladder or rectum might occur at any minute, and put aside the idea of any operative interference. Zwintz, who was treating the patient, had recourse to Adamkiewicz's method of injecting cancroin. "The picture of the illness changed as if by magic." He describes in almost dramatic language the metamorphosis which followed, and continues: "The woman, who had been bedridden for more than half a year, was able to leave her couch of pain, and, in spite of the verdict of science and of experience that she had only to wait for death, she could again busy herself with her household duties." Local examination showed softening and decrease of the tumor but not entire disappearance of it. He states that the anatomical condition after the use of cancroin is not a fair criterion; the true index is the physiological condition. Cancroin causes necrosis and softening of the fresh and growing cancer cells only, which ultimately become absorbed. The older cells are killed, and remain *in situ*, as dead masses, but doing no harm. He claims that the patient is cured, and that a mere arrest of the process does not describe the changes brought about by the cancroin injections. He says further that he has been able to "prove that it could not have been a mere accident" which led to the curing of the patient; for "the regularity with which cancroin displays its action always in the same way, and has displayed that action in a very large number of cases, shows that a law is manifested by this occurrence." He refers, in support of his arguments to his announcement in 1891 that "a cancer cell was no epithelium, but was an animal—a protozoon—specially a coccidium." The cure is the result of three factors; there is the pathological process; the means used to combat it, and the particular individuality in its relation to the disease. How these are factors of the cure he does not explain in detail. Again and again he reiterates the assertion that the patient already mentioned was in a hopeless condition before the application of his remedy. It would appear that the reiterations were intended to emphasize the fact. He proceeds next to give an account of the illness in the patient's own words (much as one reads of the person who suffered from a strange complex of symptoms, representing some wonderful disease, and was cured, after all the "doctors had given him or her up," by somebody's patent cure). He concludes by the two sweeping assertions: "(1) Cancer is curable; and (2) one may look at the problem of this cure of cancer as scientifically solved.

MEDICAL TREATMENT OF TUMORS.

The Treatment of Malignant Tumors by an Anticellular Serum.—Dr. Wlaeff, of St. Petersburg, contributes an interesting article upon this subject in the *International Clinics* (Volume 2, Eleventh Series, 1901). The anticellular serum was obtained at the Pasteur Institute, where he has been experimenting on animals for two years with injections of pathogenic blastomycetes isolated from human malignant tumors, and he has employed the serum sa far in twenty-six patients, who he divides into three categories. 1. Patients with malignant tumors, ulcerated or non-ulcerated. 2. Those suitable for operation or otherwise. 3. Those with generalized or localized tumors. Whenever

possible he made a microscopical examination of the juice and particles of the tumors before beginning treatment, and in both he almost always found, among other microbes the one mentioned above. He injects from seven to fifteen cubic c. c. of serum, the amount varying with its strength, and the experience has shown that the injection should not be made in the tumor itself. One injection is made from every five to eight days, and the serum should be taken from geese that have been rendered immune during a period of time ranging from eight to twelve months. In all of these cases, the patients were examined by several well-known physicians. His conclusions based upon a careful study of these 26 cases are of interest, and are as follows: 1. The anticellular serum is harmless. 2. Reaction takes place where the injection is made, as is shown by the swelling. 3. Reaction also takes place in the tumor itself, which first swells and then begins to decrease manifestly in size. 4. During the reaction patients feel darting pains in the tumor, which after a series of injections becomes encapsulated. 5. The ganglia which are not affected by the disease itself, but are simply enlarged, return to their normal size; those that are really diseased decrease in size. 6. In the first period of the disease, when the tumor has not yet invaded the ganglia nor the neighboring organs, is not ulcerated, and is still of small dimensions, hypodermic injections of anticellular serum check its evolution and cause it to decrease in size. Marked improvement occurs even when the disease is much more advanced, provided the patient is put on a suitable diet and allowed to rest. He lays great stress on these three conditions: regularity in the treatment, diet and rest. 7. When the tumor is ulcerated and the lymphatic ganglia and neighboring organs are diseased, the evolution of the morbid process can still be affected by regular treatment. 8. The serum also produces a general reaction of the system, with slight elevation of temperature. 9. It increases the patient's strength. 10. It lessens or does away with pain. 11 Restores appetite and sleep 12. Decreases the volume of the liver and spleen when they are enlarged. 13. Decreases or even puts a stop to fecal incontinence and loss of blood in cancer of the intestines. 14. The patients cease to lose and even increase in weight. 15. It hastens the process of blood coagulation. 16. After the injection the number of white globules doubles in the first twenty-four hours, while the number of red glubules remains the same. 17. Finally he mentions that among the twenty-six patients he has twice seen urticaria produced by the injection of serum.

CONSTITUTIONAL DISEASES.

The Treatment of Obesity.—Heinrich Stern (*Medical Review of Reviews*, July 25, 1901) in a lecture at the New York School of Clinical Medicine, May 24, 1901, says that a rational treatment of obesity can be only undertaken upon the basis of a definite differentiation between the various forms of the affection. The author is in the habit of determining the form of polysarcia on the basis of the specific gravity of the indivilual. He differentiates: Polysarcia occurring together with a high degree of body-density-hyperplasmic obesity; polysarcia occurring together with a normal degree of body-density-metabolic or common obesity; Polysarcia occurring together with a diminished degree of body-density-hydroplasmic obesity. Hyperplasmic obesity forms about six per cent of all cases of polysarcia. It occurs mostly in males. The surplus weight seldom exceeds 15 kilograms. The blood density varies between 1064 and 1068 in the male; between 1062 and 1066 in the female organism. Metabolic or common obesity occurs in about sixty-eight per cent. of all cases of polysarcia. It is more frequent in males than in females. The author distinguishes two varieties of metabolic polysarcia: (1) An increase of protoplasm together with an increase of fat; (2) An increase of fat without increase of muscle tissue. The blood density varies between 1056 and 1061 in males, and between 1053 and 1060 in women. The surplus in absolute weight amounts mostly to about twenty-five kilograms: however, cases of fifty and more kilograms surplus become less rare from day to day. Hydroplasmic obesity occurs in about twenty-five per cent. of all cases of polysarcia. It occurs more frequently in women. A blood-density less than 1054 in the male and 1050 in the female denotes the presence of this form of obesity. The author differentiates between two varieties: (1) Where protoplasm is decreased and fat alone increased; (2) Where protoplasm is diminished and fat and water increased. Obesity is not an independent affection. It is symptomatic of a general body degeneration. Besides old age and diabetes mellitus, there are no contraindications to the institution of an antiobesity treatment. Before starting treatment these factors should be ascertained: (1) Age and absolute weight; (2) Approximate extent of fat-deposition; (3) Degree of body activity, other than necessary for the conduct of vital functions; (4) Caloric value of nutriment generally partaken of. The following should be accomplished in the treatment of the various types of polysarcia: Hyperplasmic obesity-reduction of absolute and volume weight: Metabolic obesity-reduction of absolute weight and maintenance of volume weight; Hydroplasmic obesity-reduction of absolute weight and increase of volume weight.

THE EXANTHEMATA.

The Treatment of Smallpox.—Professor Courmont (*Canadian Journal of Medicine and Surgery*) and his assistants at the Lyons Smallpox Hospital attach great importance to treatment in combating the complications of smallpox. Hygienic attentions, isolation of cases of broncho-pneumonia, and suppression of dry-sweeping in the wards will prevent a considerable number of pulmonary disorders. They organized a regular service of baths, which worked from morning to night. Twelve bathing-tubs were used, some of which were heated by gas, others by steam. Each patient got a luke-warm bath of from fifteen to twenty minutes' duration every day. Thirty grams of bichloride and an equal quantity of tartaric acid were put in the bath. A spray of bichloride, 1:500, was used for the face, several times a day, a wad of cotton being placed over the eyes as a protection. Clean bed-sheets were constantly used. No odor was observable in the wards . Even if bichloride had not been used, the simple daily use of the bath would have obliged the attendants to keep the patients clean. Additional results of bathing were: Diuresis, sleep, and relief from suffering. In but one of 792 cases was slight ptyalism observed, with some general disorder of slight duration. In the ocular disorders of smallpox, the following formula was employed, and proved very successful:

℞

Methylene blue . . . . . 0.20 grm. (gr. iij)
Aq. destill . . . . . 100 grm. (℥ iiis)

Every patient having a vesicle or pustule on his conjunctiva, or even a simple conjunctivitis, had drops of this solution introduced into his eyes five or six times a day. Forty-five cases of eye disease were treated without the loss of an eye. Prior to the introduction of this treatment, four patients had lost their eyesight through smallpox, although the bichloride and biniodide of mercury had been employed (in subconjunctival injections). Red light (Finsen) was tried in four cases and pronounced practically useless. Serum therapy was considered useful, but not indispensable.

PHARMACOLOGY.

Skin Eruptions Following the Use of Orthoform.—M. W. Dubreuilh (*Presse Medicale*) reports a number of cases in which eruptions follow the local use of orthoform. He describes them under the following heads: Erythematous eruptions complicated or uncomplicated by the formation of vesicles and pustules, and (2) the rarer form of gangrene of the local area over which the drug is used.

The Value of Peroxid of Hydrogen in Chlorid of Cobalt Poisoning.—The following abstract from the *Intercolonial Medical Journal of Australasia*, June 20, 1901, appears in the *Journal A. M. A.*, August 10, 1901. The possibilities of poisoning from cyanid, now used extensively in gold mining, led the authors to make a series of experiments on the antidotes to this chemical. They find that there is no physiologic antidote to hydrocyanic acid or any remedy available that can follow this powerful poison into the circulation and neutralize it. All we can do is to endeavor to stop further absorption by converting the unabsorbed balance into some non-poisonous compound. To do this, chemical reaction must take place very rapidly, and hydrogen peroxid fails entirely from its slow action. The cobalt salts are poisonous; otherwise they would be very useful, since their reaction with hydrocyanic acid is instantaneous. Ferrous salts, administered with sufficient alkali, are as efficacious

as cobalt salts. At body temperature the formation of ferrocyanids is instantaneous; but they possess two disadvantages: The difficulty of keeping them in solution and the absolute necessity of administering enough alkali at the same time to completely neutralize any stomach contents. This can be best effected by simultaneous administration of magnesium oxid. The displacement of ferrous salts by other remedies of recent years is no doubt due to inadequate appreciation of this fact. The extreme rapidity of the action of cyanid poison leaves no time to prepare solutions and collect remedies. The authors, therefore, recommend that in all mines and mining laboratories where the chances of accidental poisoning from cyanids occur, solution of ferrous sulphate, weak potash, and a small package of magnesium oxid, together with a stomach tube and suitable receptacle for mixing, should be kept ready prepared in some suitable position, so that they can be administered with only a few seconds' delay.

Chromic Acid in Epithelioma.—Douglas W. Montgomery (*Occidental Medical Times*, July, 1901) advises the use of **chromic acid in cancer of the skin.** In his opinion it is necessary that all the friable diseased tissue be thoroughly cleansed and curetted, and the base thoroughly dried before the acid is applied. The pain is at first severe, but is transitory. He reports a number of cases in which this treatment was employed, and states that among its advantages are that the scab is tough and durable, which will assist healing.

A Note on the Use of Thuja Occidentalis in Removal of Papilloma of the Larynx.—James Moreau Brown (*Journal of the American Medical Association*, August 3, 1901) reports a case in which the application of thuja caused such shrinking of the growth after partial removal by operation, that further operation was abandoned, and the thuja only applied, with the result of complete disappearance of the growth. In addition, the author knows of several cases of a recurrent type in which the growths have entirely disappeared under the use of thuja with no evidence of recurrence after several years.

Hedonal.—Chemically, hedonal is methylpropylcarbinolurethane. It was first studied, in 1889, by Dreser, and the therapeutists who have employed the drug say that its hypnotic effect is certain and is obtained within an hour after its administration. It has been given by Combemale and Crespin (*L'Echo Medical du Nord*, July 21, 1901) in doses of from one to three grams in twenty cases of insomnia. The insomnia complicated such diverse diseases as acute articular rheumatism, alcoholic gastritis, chronic lead poisoning with parotiditis, acute miliary carcinosis, pulmonary tuberculosis, chronic bronchitis, "coffeeism," carcinoma of the thyroid gland, nephritis with uremic dyspnea, locomotor ataxia, alcoholic neuritis, bronchopneumonia with intense dyspnea, alcoholism, material cachexia with splenomegaly, acute dementia and neurasthenia. Out of the twenty cases, six have been unsuccessful because the insomnia was due to pain or some somatic cause, such as cough. In such conditions, therefore, hedonal is useless. But in cases of insomnia from mental causes the remedy is considered by the authors to be superior, in one instance at least, to sulphonal. It is best administered in the evening and may be exhibited for several days without danger. Accumulation phenomena are not to be feared and the elimination is perfect; furthermore, the usual secondary effects of the hypnotics are wanting after the exhaustion of this remedy. Brochoi gave five or six grams of the remedy as a single dose, and his patient complained of vertigo and tinnitus. Hedonal has been used by Heichelheim, Schluter, Schuster, Arndt, Moor, Claus, Nawratski, Crocq and others, but we should advise its employment in general practice with great caution, if at all, on account of the little definite knowledge of its possibilities for harm.

Creosote in the Treatment of Tuberculosis of the Hip and Spine.—Agnes Walker (*Arch. Pediatrics*, July, 1901), reports two cases of interest on account of the large amount of creosote administered without producing injurious or unpleasant results. The first case was a boy of three years, who, in December, 1893, was put upon 1-minim doses of a ten per cent. solution. This was gradually increased until, in November, 1895, he was getting a daily amount of 371 minims, with no apparent effect for good or evil. Treatment was discontinued. The second patient, a girl of seven years, received the creosote solution for four months, the dosage having by that time reached 300 minims of the solution, or 36 minims of pure creosote daily. She left the hospital in excellent condition, and from having been confined to bed, wearing spinal traction apparatus, is now able to walk, run and bicycle. No evidence of renal disturbance was found in either case.

Yohimbin of No Value as an Aphrodisiac.—From *Vratch*, quoted in *Merck's Archives*, we take the following: "Prof. N. P. Kravkoff, of St. Petersburg, has made a thorough investigation of the recently lauded preparation, yohimbin, both as to its physiological and therapeutic effects. His experiments, conducted with painstaking care, were made on pigeons, rabbits, dogs, and men. All tests showed that while the drug possessed decided toxic effects, it had no aphrodisiac action whatsoever, neither on men nor on the animals. It is true that in the animals the drug caused swelling and congestion of the sexual organs, but there were no complete erections, and there is a great difference, the author states, between a congestion of the organ and an erection. The sexual desire was in no case increased, but rather diminished. The congestion of the sexual organs is not due to any specific action of the yohimbin, but to its general vosodilating effect. For instance, if given to roosters, the combs are seen to become congested and reddened very rapidly. The drug has a very powerful effect in reducing the body temperature, much stronger than the salycilates, antipyrin, etc. The human subjects on whom the author tried the effect of the yohimbin were six physicians; some of those suffered with relative impotence due to neurasthenia; the others were perfectly well. The yohimbin was taken in the usual doses—namely, one-twelfth grain, either in the form of a solution or in the form of tablets prepared directly by the firm of Güstrow. Not only were the results absolutely negative in each case as far as any aphrodisiac action was concerned, but the by-effects—namely, nausea, salivation, clouded mind, irritability, congestion of the conjunctivæ, syncope, etc.—were so strong that the tests could not be continued for more than two to four days. The author says that if Mendel's patients were benefited by the yohimbin, it must have been the result of psychic action."

Yeast Enzyme and Fermentation.—E. Buchner gives the results of experiments which favor the view that the active agent in fermentation processes is of enzymic character (*Berichte*, through *Pharmaceutical Journal*). Yeast was dried *in vacuo* at temperatures from 35°-100°C., and then heated for several hours in a current of hydrogen, first at 100° and then at 110°C. After this treatment the yeast has no fermenting power, as was conclusively proven by observations of its action on wort, the observations extending over a period of three weeks. The sterile yeast was then ground up into a paste with sand, kieselguhr, and 10-percent aqueous solution of glycerin, and the mass subjected to strong hydraulic pressure. The liquid pressed out from the paste was found to have strong fermenting action. In spite of the sterilization and the loss involved in the extraction with aqueous glycerin, the fermneting power was found to be one-quarter to one-half that of the original yeast. These experiments do not conform to the hypothesis set up by the opponents of the enzyme theory, that the fermenting power of yeast is due to living protoplasm, for the latter is certainly no longer present in the yeast after its subjection to the sterilizing process described. The specific action of the enzyme zymase is therefore not dependent on the presence of the living cell, and in this respect zymase is perfectly analogous to the active enzyme of urea fermentation isolated by Miquel.—(*Bulletin of Pharmacy*, August, 1901).

Effect of Hydrochloric Acid Gas on Seeds.—The use of this gas for the distruction of insect pests infesting stored grains is increasing so rapidly that it was thought advisable to conduct certain experiments to ascertain its effects upon the germinating quality of the grain and to discover if the latter thus treated would be injurious as an article of food. Accordingly Mr. C. O. Townsend made certain experiments along these lines, and has published a paper *Botanical Gazette* giving a detailed account thereof and the results obtained. The viability of the seed is de-

stroyed if it is kept sufficiently long (a few weeks or months) in an atmosphere saturated with the gas. If the seed is dry it will resist the destructive power of the gas much longer than if wet; damp seed should be kept for more than two or three hours in gas strong enough to be destructive to animal life. Dry seeds kept for several days in hydrocyanic acid gas sufficiently strong to kill any insect pests that may be in the grain will not affect animal life and may be freely used as food. Damp grain treated similarly is injurious to animal life if eaten immediately after taking out from the gas; but if allowed to air for a short time after fumigating its utility as an article of food will not be injured.—(*Bulletin of Pharmacy*, August, 1901).

Adulteration of Powdered Cascara.—Emile Perrot states (*Jour. Pharm. Chim.*) that on the European Continent powdered cascara sagrada is sometimes adulterated with that of *Rhamnus frangula*. He gives figures of the microscopical elements of the two barks, and states that cascara bark may be distinguished by its peculiar sclerogenous cells, either isolated or in masses. A portion of the powder is moistened with solution of chlorinated potash, which immediately colors yellow the parenchymatous elements of cascara, while the corresponding cells of *Rhamnus frangula* develop a deep red tint. The powder of the latter bark contains numerous collenchymatous cells and corky layers markedly impregnated with red-brown tannin which are not present in cascara. The author points out that although the admixture is fraudulent, in view of the difference in price of the two barks, it may not be of serious importance from a therapeutic point of view, since it is an open question if *Rhamnus frangula* bark might not replace that of *Rhamnus purshiana* as a medicine. [Other barks, however, which are often spuriously admixed with the true *Rhamnus frangula, are* therapeutically inferior, and their admixture becomes a matter of importance.]—(*Bulletin of Pharmacy*, August, 1901).

Calomel as a Diuretic.—E. v. Leyden (*Fortschritte der Medicin*, 1901, No. 12, quoted in *Wiener Klinische Wochenschrift*, May 23, 1901) states that it is unfortunate that the diuretic properties of calomel are not taken more into consideration. He reports the case of a patient whose life was saved by calomel. In cases where other diuretics, and even digitalis fail, calomel should be used, three to five times daily. The diuretic effect generally appears with the beginning of mercurialism, and in the case of von Leyden showed itself on the sixth day. Jendrassik, who revived the use of calomel as a diuretic after it had long been forgotten, only uses it in cases of dropsy with the kidneys intact.

Cochenille in Whooping Cough.—Hesse (*Die Therapie der Gegenwart*, Mai, 1901) has employed this remedy in fifteen children with whooping cough, whose ages varied from four months to eight years. In no case did the disease last longer than five weeks when treated with this remedy, the attacks becoming less annoying and less frequent. In six cases recovery took place in three weeks. This particular epidemic was particularly malignant in character as was seen by the long duration of the cases not treated with cochenille and the several which ended fatally from pneumonia and meningitis.

Cinnamon in the Treatment of Influenza.—J. Cane Ross (*British Med. Journal*, June 8, 1901) claims that a decoction of cinnamon leaves, if administered twenty-four hours after the initial symptoms of influenza, will abort the disease. The remedy is continued until the fever abates and then continued for four days.

GENITO URINARY DISEASES.

The Treatment of Syphilis with Cacodylate of Mercury.—Brocq (*Bulletin Medicale*, 1901, No. 53) reported at the French Society for Dermatology and Syphilography that he had employed this drug in numerous cases since one year. He stated that the pure product which was acid, very poisonous and painful, was soon abandoned and a neutral combination adopted by Fraisse, with an admixture of sodium and sodium iodide. This latter preparation is very durable, can be sterilized at 120° and contains in each c.c.m. 4.7 mg. of biniodide of mercury and 4 cg. of cacodylate of soda; with it aqueous solutions can be made which are entirely clear. Doses of from one to two c.c.m. were injected. The pain is almost nothing or extremely slight and sometimes if the injections are made too superficially, small knots occur. In one instance pigmentation occurred and several times stomatitis and diarrhea. The remedy proved itself very efficient both in the secondary and tertiary stages of syphilis and was particularly useful in patients that were weak and neurasthenic. As a whole the combination of arsenic and mercury yields better results in some cases than mercury alone.

The Value of Hydrotherapy in the Treatment of Syphilis and Gonorrhea.—S. Munter (*Münchener med. Wochenschrift*, Nr. 49, 1900) considers hydrotherapy as an accessive therapeutic procedure to the mercury and the iodides in the treatment of syphilis. Especially in robust individuals is it of value to combine hydriatic measures with drugs. When an idiosyncrasy towards mercury exists a combination of hydrotherapy and inunction is of value. When gummata exist, and especially in those cases where a mixed treatment is indicated, good results are obtained by the additional employment of hydrotherapeutic measures. In chronic forms of gonorrhea the author abandoned all forms of local treatment, especially when nervous phenomena were present, and instead advocates the use of hot sitz baths, which are to be increased in temperature; the latter method of treatment is also valuable in chronic prostatitis.

An Experiment with Serotherapy in Syphilis.—Piccardi (*Giornale italiano delle malattie veneree e della pelle*, 1901. Heft 1) attempted this experiment with four patients suffering with syphilis in the secondary stage. The serum was obtained from a woman 25 years of age who, while she herself was free from congenital or acquired syphilis, had given birth to a syphilitic child, her husband being severely infected. Five hundred and fifty c.cm of blood were taken from the median vein of the woman, and after it had proven sterile, was injected subcutaneously into the patients in doses of from 1 to 10 c.cm., as many as twenty injections being performed. Although no local reaction was observed, the syphilis was not influenced in any way, but followed its regular course. The author concludes that the serum of a woman who is immunized by the fetus which had been infected by a syphilitic father had no curative action against syphilis.

DERMATOLOGY.

The Treatment of Impetigo Vulgaris.—Dr. Menahem Hodara, of Constantinople (*Monatshefte für praktische Dermatologie*, Band 33, No. 3) highly recommends the following treatment of *impetigo vulgaris* (Unna) or *impetigo contagiosa*, the impetigo pustules are touched with a 50% solution of nitrate of silver daily or every second day, recovery taking place after two to four applications. In the case of infants where such a strong silver nitrate solution is not to be entrusted to the parents, a 2 to 10 per cent. solution applied once or twice daily will suffice, followed by dusting with a powder composed of one part of calomel and nine parts of starch.

The Treatment of Impetigo.—Oehler (*Allgem. med. Centralzeitung*. 1900. No. 89). After detaching the crusts the author has not found that bichloride of mercury solutions do any good. Instead he employs an ointment composed of salicylate of zinc and lanolin, in strengths varying from 2 to 5%. If the impetigo is distributed all over the body, baths are added in addition to the other treatment and the patients put to bed in order that the clothes will not irritate the skin.

Rectified Oil of Turpentine in the Treatment of Dermatomycoses.—Leonhard Leven (*Monatshefte für praktische Dermatologie*, 1901, Band 32, No. 4) recommends rectified oil of turpentine for the treatment of **dermatomycoses**, and especially in **pityriasis versicolor** and **herpes tonsurans**. The treatment consists in sponging the affected areas with turpentine in the case of pityriasis veriscolor, and in herpes tonsurans clothes saturated with the oil of turpentine are applied to the lesions. In a few days an intense irritation is set up, the affected areas become moist

and very sensitive. If an indifferent ointment is then applied, recovery will soon take place.

The Treatment of the Hair in Typhoid Fever.—H. M. Little says (in the *Montreal Medical Journal*): In view of the fact that in different institutions and in private practice, not a little variation of opinion exists as to the necessity of cutting the hair (or shaving the scalp) in typhoid fever, I have examined into the results of the treatment under different conditions—the observations being of interest, inasmuch as frequent statements have been made, that radical measures are wholly unneccessary, as well as unkind to the afflicted individual. Sixty-two cases were examined some months after their affection, and the results of the various treatments noted. Of these, thirty-five had their hair cut while in hospital, and in only seven was subsequent falling out of the hair noted. Of these seven, four were cut late. The ultimate result in all was a thicker growth of hair than ever before. In two cases it was thought to be coarser than before. Twenty-seven patients (fifteen women and twelve men) had not their hair cut, and in only three there was no falling out. Ten had to have their hair cut out later to prevent baldness, seven being females. In seven other cases not cut, four are very thin, two were still falling, and one, curly before, is now thin and straight.

Prickly Heat.—Frederick Pearce (*The Journal of Tropical Med.*, July 1, 1901) considers soap injurious to the skin by removing its natural grease, and deprecates its use, especially in the tropics. He finds his recommendation to oil the skin in prickly heat very successful, and prefers lanolin in almond oil, with the addition of a little menthol. He considers prickly heat to be a form of acute seborrhea, but whether any bacterial or fungous growth is the proximate cause he has not been able to determine.

Lupus Vulgaris of Twelve Years Standing Treated with Urea and Cured.—Authur H. Buck contributed (*Practitioner*, July, 1901) an interesting report of a case of lupus vulgaris of twelve years' standing cured by treatment with urea. With regard to the case, he lays special stress on the following points. The patient was one who had been saturated with tubercle, and who posessed the tubercular diathesis to the last degree. He mentions that lupus is perhaps the most intractable form of tuberculosis, especially to what are known as general or constitutional remedies. The habits and diet of the patient have been opposed to the cure of any tuberculous trouble, and these conditions have not been altered in any manner. The lesion being on the surface, it was watched with astonishment as within a month the disease seemed almost to melt away. No bad symptoms occurred, the urea was administered in doses of 1 drachm t. d. s., but rather, on the contrary, the patient felt able to enjoy life a little for the first time for years. The patient was put on 20 gr. of urea and the dose increased to 40 gr. by 10 gr. a week. At the age of 24 years lupus commenced in the nostrils and upper lip, and it spread with great rapidity along the septum of the nose, and cutwards over the cheeks. He had been under Dr. Buck's care for two years and the condition when treatment with urea was begun was as follows: A large ulcerated surface was exposed, extending from the center of the hair over the forehead to a point an inch above the outer end of each eyebrow. Hence it spread downward along the upper border of it and down over the root of the nose and on to the cheeks on each side. Both cheeks to a width of six and a half inches were involved, and the upper lip had mostly disappeared, especially in the center where the upper gum is continuous with the tissues under the nostrils. The left lower eyelid had disappeared, and the area was discharging freely. The condition generally was most pitiable. On the 26th of March of this year, urea was prescribed in 20 gr. t. d. s., in peppermint water 1 oz., together with maltine, one half oz. t. d. s. The ulcers were dressed with *ung. plumb. iod.* The first changes were noticed in about a fortnight, and a diminution in the amount of discharge both on the face and in the nasal cavity took place and a tendency toward healing. On the 11th of June all the nodules had entirely disappeared, and there was no discharge from the nasal cavity, and the rest of the once extensive ulcerated surface was entirely healed.

MALARIA.

The Action of Methylene Blue on Malaria Parasites.—A. Iwanoff (*Deutsch. Med. Woch.*, May, 2, 1901) reports his investigations on the effects of methylene blue on the various forms of malaria parasites. He administered methylene blue in three daily doss of five grs. each to patients in whose blood tertian parasites could be found. The first changes noted began at the end of the second day, and affected only the fully-grown forms; the smaller, younger forms remained unchanged. The adult organism showed diminished ameboid movement, and a breaking up of the protoplasm into several little lumps. The latter are rounded, and lie on the blood cell apart from one another, or are connected with each other by minute bands of protoplasm and pigment granules. The protoplasm of these lumps is shrunken, seems to be compacter, and stains a more intense blue than the protoplasm of normal parasites. The fine pigment bodies are spread out over all the lumps, and are mostly to be found at the periphery. The nucleus of the parasite is found generally near the peripheral portion of the blood cell, and shows in its carmine-violet stained chromatin that it consists of numerous granules. Among the sporulation forms he found beside normal sporozoites, others which were not fully formed. Some show their protoplasma very distinctly, while others appear to have no plasma at all. The pigment is gathered in patches, and they are irregularly distributed. The chief points he notes in the action of blue on the tertian forms are destruction of the protoplasm and no alternation of the chromatin. In the ring-form parasite of estivo-autumnal fever he finds no changes. In the crescent forms he is able to demonstrate the shrinking and granulation of the protoplasm. He noticed a more equal staining of the whole parasite than in the normal. The pigment granules appear coarser, and are grouped in an irregular mass, which projects from the surface of the shrunken protoplasm. The destruction process of the protoplasm of malarial crescents goes on until there is nothing of the parasite left except the pigment. He did not succeed in being able to record the changes in the embryonic cells of this form. Comparing the effect of methylene blue with that of quinine on the various forms of malarial parasite, he says that the former affects the protoplasm, and the latter the pigment (chromatin). In the early forms the proportion of the pigment to the protoplasm is quite different to that in the adult stages, and so the early forms are scarcely affected by methylene blue, while they are very markedly affected by quinine, while the adult forms show the susceptibility.

DIETETICS.

Undiluted Milk as a Food for Infants.—Notwithstanding tireless research and wonderful ingenuity (says the *Journal A. M. A.*, August 10, 1901) a perfect substitute to replace mother's milk as an article of food for the nourishment of infants yet remains to be discovered. This is generally to be regretted, as the occasions are not rare on which mother's milk is not available, or it is desirable or even necessary to have recourse to such a substitute. The fact is that there is yet not a little to learn concerning the assimilative processes in children, and knowledge, particularly of a practical character, concerning food is not so extensive or so precise as it might be. As K. Oppenheimer points out in a recent comunication, an article of food for the infant, to serve as a perfect substitute for mother's milk, should be as useful as the latter in the nourishment both of healthy children and of those suffering from gastro-intestinal catarrh. These requirements, however, are not met by any of the large number of artificial foods that have been devised. For the purpose of establishing the usefulness of undiluted cow's milk as judged by this standard, Oppenheimer made comparative observations in normal healthy children, in infants suffering from gastro-intestinal derangement and in atrophic children. In almost all of the 11 cases of the first group the bodily weight exhibited a steady and uniform increase; while of 36 cases of the second group only five failed to do well; and of 12 cases exhibiting marked atrophy 8 failed to do well. All of the foregoins cases were under observation for periods of more than four weeks. Of 33 additional cases under observation for a shorter period than four weeks 20 thrived and 13 did not.

Infant Feeding.—The mortuary returns of the summer months in infantile life (says *Dominion Medical Monthly*) prove that the subject of infant feeding has not as yet reached perfection. Take, for instance, Montreal, with

barely a total population of 300,000; the records show that in two recent weeks the deaths among infants amounted to 116 and 107 respectively. It is a melancholy fact that at the end of the nineteenth century, a period which boasts such rapid progress and development in civilization and undoubted advancement in all branches of medical science, that one-third of all infants born die before they have attained the completion of their third year, and this largely due to improper feeding methods. While we have undoubtedly made substantial progress in this particular branch of sanitary science, that progress is, in the main, mostly theoretical and not practical. We are not as yet able to supply a synthetic breast-milk exact with the normal product. There may be probably too eager a desire on the maternal side of the problem to entirely cease from nursing where the natural product fails, or is failing, instead of endeavoring to supplement the deficiency by other methods, which have now practically fallen into disuse. The physician who conserves the energies of his patient in the direction of due and proper encouragement to continue the baby at the breast, be the pabulum ever so little, will in the long run reap better rewards than they who abandon this entirely for the various diversified proprietary foods of which the times are prolific. Even when the breast has to be abandoned entirely, and substitute feeding commenced, much will be accomplished by him who bolsters up the all too meagre knowledge of the mother for her bottle-fed baby. The mother is generally imbued with the idea that the bottle fed baby requires less attention than the breast-fed one, and that anyone can supply this attention as well as herself. This certainly is false teaching, and needs early correction. Into these mothers' hands are thrust scores of fat babies' pictures, which serve the purpose of exploiting infant commercial dietaries, and by their simplicity of preparation appeal to the laziness of the mother. What a different tale would be told if the victims of this commercial instinct could be placed side by side in photographic array with their more fortunate brothers.

For the sake of helpless infants who succumb in countless armies every summer, what a pity it is that parents cannot be brought to a proper conception of their duty towards their offspring. The constant and regular supervision of the family physician over these little ones, training the mother in the proper care of feeding of her child, would, we think, go far towards lessening the frightful mortality recorded in all large cities during the summer months; and to that extent a fraternal organization for the infants alone, of a health and sick benefit nature, with a physician attached, making regular and stated visits upon his charges, might go far towards solving this problem of infant feeding, which is intimately associated with that of infant mortality. The State herself cannot afford to have citizens brought up in the world without the "milk of human kindness" which, someone asserts, is to a good extent absent in most bottle-fed babies. What we require for success in this direction is some very simple plan of modifying cows' milk (not cow's milk, as all are agreed that milk taken from a large number of cows is better than from a single cow). So far, we think that this has not been accomplished, as authorities now agree that the vast majority of these modifications have proved failures, and until such times come when we have a plain, simple rule to go by and to instruct mothers with, we may expect that they will not take kindly to our efforts to inculcate proper methods of feeding among their numbers.

DISEASES OF THE LUNGS.

Zomotherapy.—Leonard Robinson (*The Practitioner*, July, 1901) has studied the subject of zomotherapy in phthisis. The conclusions of Robin and Binnet in regard to the respiratory change in phthisis are noticed, and the further conclusions of Robin that remedies used to diminish its exaggeration, including cod-liver oil, cacodylate and raw meat are indicated, in addition to rest and fresh-air treatment. This latter, raw meat and serum, is called zomotherapy. It is not a method of over-feeding, for in the amount of meat juice used, the quantity of albuminoids is small. Cooked meats given in small quantities act as a toxic substance and seem to favor the tuberculous process. The results of zomotherapy seem to depend upon the question of dosage; upon the minimum ratio between the weigh of the patient and the quantity of muscle juice or raw meat taken. Below this minimum limit, an improvement of symptoms is possible, but a cure is not to be expected.

The Treatment of Acute Bronchitis in Infants.—Charles O'Donovan (*Medical News*, July 13, 1901) suggests that in the milder cases regulation of the diet, mild laxatives and good ventilation are all that is required. Infants take medicine badly, and are best treated by local applications and inhalations, such as the oil silk jacket and stimulating steam implement and air. This author does not favor the general use of expectorants. He believes that the compound syrup of hypophosphites is best in young children. In older children the medicine should contain muriate of ammonia in proportion to the age of the child. Hypnotics should be given with judgment; sodium bromide will sometimes be all that is necessary. In prolonged cases where the action of the heart is rapid and the pulse shows signs of weakness, strychnine administered hypodermically is of great service. He particularly emphasizes the point that a child should not be allowed full liberty until the disease is completely cured, and should be confined to the house until the bronchial catarrh has disappeared entirely. Convalescence may be hastened by judicious feeding, stimulants, massage, friction, and the use of cod-liver oil, iron and arsenic.

Formula of the Zomotherapeutic Treatment.—(From the *Practitioner*, July, 1901). [The attention of the reader is called to the Editorial upon this subject in this number.—Ed.] Preparation of the muscle juice of beef: (1) Take very fresh steak, cut up fine, and with fat removed. Allow this to macerate for two hours in cold water (previously sterilized by boiling or filtration); the quantity of water equals the fifth of the weight of the meat. This meat, impregnated with water, is then pressed with a household press in portions the volume of which shall be in proportion to the size of the press. The pressure must not be applied too strongly, and must be repeated every five minutes. In the press the meat must be enveloped in a resistant cloth. The press must be cleaned with boiling water and after each operation. (2) The doses of the fluid to be taken vary with the stage and the gravity of the disease. The doses may be fixed in the following way, according to the weight of meat to be pressed:

For latent tubercle or phthisis in the 1st stage, press from 500 to 1,000 grams of meat.

For phthisis in the 2nd stage, press from 1,000 to 2,000 grams of the meat.

For phthisis in the 3rd stage (or the miliary form) 2 to 3 kilogr.

Including the quantity of water added to the meat, the total quantity of fluid obtained by pressure should be at least 400 grams per kilogram of meat. With a very strong press the amount may reach 500 grams. Consequently the patient must absorb: in the case of latent tubercle or a phthisis in the first stage, from 200 to 400 grams of fluid: in a phthisis in the second stage from 400 to 800 grams, and in a phthisis in the third stage or in the acute typhoid or cerebro-spinal form from 800 to 1,200 grams of fluid. (3) The muscle juice thus obtained is very unstable and changes very easily. It cannot be transported. It should be taken as soon as it is prepared. If the quantity is too large to be taken at one dose, then the meat must be pressed twice in the twenty-four hours. It should be taken as prepared, or with the addition of a small quantity of salt. In case of very marked repugnance of very great susceptibility of the stomach, it could be sweetened with syrup or oranges or even soda water might be added. The best time to administer the fluid is half an hour before luncheon. In these conditions, the patient's appetite is not generally affected. If it should be, then by feeling our way we must find favorable time. Muscle juice never gives rise to intestinal disturbance. If such disturbance—*e. g.* diarrhea—should occur, the reason is that the meat pressed was not fresh or that the juice has been prepared carelessly, or was not taken quickly enough after it had been prepared. Every precaution recommended must be more strictly followed as the temperature of the air becomes higher. (4) As far as possible the patient will replace all the *cooked* meat in his diet by an equal amount of *raw* meat, scraped and taken in a small amount of cold bouillon, or in bolus form salted or sugared, or covered with jam, or with some mayonnaise sauce, or

mixed with the yolks of hard boiled eggs, capers, and vinegar, etc. But if the patient cannot support the raw meat, it would still be preferable for him to suppress the *cooked* red meats in his dietary. (5) The rest of the dietery will be normal. It will, however, be better not to insist on eggs, usually recommended by the partisans of hyperalimentation. Milk should be taken unboiled as much as possible, very fresh, and never in excess. Rice, lentils, peas, "boulettes" prepared with flour, should frequently be seen on the table, as well as oysters, shellfish, snails, and smoked fish. When the fever is such that the dietary must be reduced to its simplest expression, then meat juice, raw meat, and rice with milk will form the basis of this reduced dietery. (6) If the patient is not arthritic, if he is not predisposed to congestive and hemorrhagic attacks, if he has a good appetite and all his digestive powers, and if he can take raw meat in *large quantity* without disgust, it is then needless to have recourse to the preparation of muscle juice, always a long and difficult process. But in these circumstances, the patient must take daily at least: in phthisis in the first stage, from 300 to 400 grams of raw meat; in phthisis in the second stage, from 300 to 400 grams of raw meat; in phthisis in the second stage, from 500 to 800 grams of raw meat. Each dose of raw meat may be followed by a small quantity (half a wineglass) of some wine, as bordeaux or muscat. (7) The fear of tenia should not deter patients from this raw meat treatment. In the first place, with meat properly prepared, such an accident is extremely rare; on the other hand, it is of small importance, nothing being easier than to get rid of such a parasite, and the small inconvenience of the anthelmintic treatment cannot be weighed against the cure of such a disease as tubercle. Raw mutton from this point of view does not give rise to any inconvenience, but we cannot affirm that this meat has the same therapeutic action as beef. Identity is, however, probable. (8) All supposed specific treatment, all absorption of drugs, must be stopped during the zomotherapeutic treatment. Cod-liver oil can be continued. It is an understood thing that the patient must place himself under the hygienic conditions recognized as indispensable to the cure of tubercle, such as plenty of air, absence of all fatigue, if not absolute rest, and aseptic cleanliness in the surroundings. (9) The length of the treatment is undetermined; but it is indicated to continue the use of raw meat for six months at least after the disappearance of alarming symptoms and the establishment of an apparent state of cure, and to begin the treatment again for a few weeks every time that the healthy equilibrium seems to be upset.

THE NEWER MATERIA MEDICA.

Nirvanin.—Nirvanin, chemically Hydrochlorate of diethyl-glycocoll-p-amido-o-oxybenzoic-methylester, is a local anesthetic agent claimed to be one-tenth as toxic as cocaine. It has been used in children without ill-effects. Its use, as reported, is not attended by any excitement, by any influence upon the respiration or by any weakening of the heart-action. Owing to its relative non-toxicity this drug is of special value to secure local anesthesia of parts the circulation of which cannot be easily controlled, as in operations upon the anal region. Nirvanin anesthesia lasts longer than cocaine anesthesia. Its effects are prolonged. Nirvanin does not irritate wounds, does not interfere with healing by first intention. Being bactericidal it is not necessary to boil the solution or add anthing to it to make it aseptic; however sterilization by boiling does not decompose solutions of nirvanin, does not impair the anesthetic properties of the latter. The most commonly used solutions for hypodermic injection anesthesia are the 1, 2, 3 and 5 per cent. aqueous solutions; for infiltration anesthesia, ¼ to ½ per cent. solution. Luxenburger recommends that the nirvanin be dissolved in sterilized salt solution.

Acetospirin, a New Salicylic Compound.—This has been used by Winterberg in the General Hospital in Vienna in in 100 cases of acute and chronic rheumatism with marked success (*Wien. Klin. Wochenschr.*). It is a combination of aspirin, or aceto-salicylic acid, with antipyrin, and is distinguished from the other compounds of salicylic acid by the fact that it is insoluble in the gastric juice, and therefore does not irritate the mucous membrane of the stomach. The dose is 0.5 gram five or six times a day in wafers. It occurs as a white crystalline powder, having a slight odor of acetic acid and almost insoluble in cold water. Vollman's experiments showed that this preparation is insoluble in the gastric juice, but readily soluble in the intestinal secretions.

Sidonal (Quinate of Piperazin), a new remedy recommended for gout is said to be a compound of quinic acid with piperazin. Excellent results are claimed from its use. It is extremely soluble in water, and is prescribed in 8-grain powders ten times daily, or in solution, ½ oz. to 8 ozs., a tablespoonful every two hours. The preparation tastes slightly acid, but has no drawbacks. The solutions exhibit a tendency to grow mouldy after two or three days.

Bismutose.—This is a recently introduced bismuth-albumin preparation containing 22 per cent. of bismuth, and is described as an odorless, tasteless, white powder, gradually changing to a slate-gray on exposure to light (*Merck's Report*). It is insoluble in water and the usual solvents. It has ben found useful in treatment of gastric intestinal diseases of an infectious or diarrheal character, and as a dusting powder in intertrigo, eczema, and burns.

Mercury Cacodylate.—Mercury cacodylate is described (E. Merck's *Bericht*, 1901) as occurring in the form of white crystals, readily soluble in water, and with difficulty soluble in alcohol. This substance has been experimented with by Vayas upon rabbits. The good results obtained determined the author to experiment with the preparation in the Broca Hospital, of Paris. The results here noted have not yet been summed up, but the dose for intramuscular injections has been fixed at 0.03 gram (½ grain) per day.

Pancreon.—This is described (*Bull. of Pharmacy*) as a preparation obtained by the action of tannic acid on pancreatin. It is a grayish odorless powder, having a strong tryptolytic power, 1 gram of it digesting 85 grams of albumin (out of 100 grams experimented with) in fifteen minutes, at a temperature of 40° C., and in weak alkaline medium. It has also strong amylolytic and emulsifying properties. Its superiority over pancreatin lies in the alleged fact that it is capable of resisting the destructive action of the gastric juice for a period of five hours. Dr. Gockel (*Therap. d. Gegenw.*) has used pancreon with good results in thirty-four cases of different gastrointestinal affections in doses of 5 to 8 grains three times a day.

TUBERCULOSIS.

Revival of the Tuberculin Therapy.—It is not improbable that the excellent results just reported by Goetsch in the *Deutsch. Med. Woch.*, (June 10, 1901) concerning his ten years' experience with tuberculin, which remedy he has used apparently without reference to the experience of other men, may lead to an extensive revival in the use of this substance, based upon the principle devolved by the author in connection with the 224 patients treated by him in the hospital at Slawentsitz in Upper Silesia. Professor Koch, having visited the hospital in question, asked for the publication of the results obtained as a document to the original soundness of his views on the application of tuberculin (although the method of Goetsch differs extensively from that of Koch and his immediate successors.) The chief error in the early use of tuberculin was its indiscriminate use in advanced cases, in mixed infection, etc., etc. Koch, who had always antagonized this abuse of the drug, nevertheless taught that a slight reaction was desirable, as evidence that the remedy was producing its desired effects. Goetsch, however, has worked the problem out in quite a different manner, and his teachings involve three fundamental principles, viz.: (1) Never use an injection of tuberculin, however small, upon a patient with the slightest rise of temperature. If the fever cannot be dissipated by rest in bed and cold packs, the patient shall not be treated with tuberculin. (2) Never increase the dose under any circumstances when the preceding dose has produced any reaction whatever. (3) Upon the day of the injection, and the day following the patient must remain in bed; otherwise a reaction may ensue. By carrying out these principles Goetsch has been able to administer very large doses of tuberculin without the production of the slightest ill result. The diagnosis of tuberculosis is made either by the discovery of bacilli in the sputum or by securing a diagnostic reaction with tuberculin. This is the

only reaction which Goetsch wishes to produce. If a patient does not react to 0.05 mg. tuberculin, which has been given in fractional doses, rapidly increasing in size, he is pronounced free from tuberculosis. The diagnosis of tuberculosis having been made, it remains to determine the eligibility of patients for the tuberculin therapy. The principal disqualification is the presence of fever, while in general an advanced stage of the local mischief, as well as a low condition of the vital forces would also render patients ineligible. The technique of the injections is as follows: The first dose is given on the third day of hospital sojourn, and is based as to its size upon the degree of local implication of the lungs and of strength which remains to the patient. Goetsch usually begins with 0.0001 gm. of old tuberculin. Should this injection produce a rise of temperature, the next one is made only one-tenth as strong. If the old tuberculin is not tolerated, the new preparation T. R. is substituted. The latter is usually well-borne in 0.001 mg. doses, and appears to pave the way successfully for the use of the older preparation. As soon as the patient can tolerate 0.1 mg. of the T. R., we may go back to the original tuberculin, beginning with 0.0002 to 0.001 gm., and may expect to find it well-borne. The dose may be very carefully increased over a long period of time until the patient can tolerate a full grain of the old tuberculin without reaction. In regard to Goetsch's results, they read like many of the favorable reports with selected material, but a remarkable feature about his series of patients is the following: Goetsch, during a period of several years, used absolutely no treatment but tuberculin. Having established criterion, he now introduced diet, massage, cold packs, etc., but was unable to improve upon his earlier results obtained by the specific treatment unaided. Another striking feature is found in the following experience: Goetsch had only pursued his tuberculin-therapy for a year when the severe reaction which set in universally made it impossible for him to get patients for several years. When cases began to come in, he found that they came invariably through patients whom he had cured in 1891.

The Treatment of Tuberculosis in Childhood.—Albert Josias and Jean C. Roux report the results of their treatment of tubercular children with raw beef juice and muscle serum. (*Medecine Moderne*, July 31, 1901, No. 31). At first each child received the juice expressed from 500 g. of raw beef. Later they also had 100 to 150 g. of raw beef made into cold bouillon. Only three cases had incipient phthisis, and the treatment seems to have cured one, and greatly ameliorated the others. Diarrhea disappeared, weight increased, the tubercular process ceased to progress, and the general condition improved, upon the treatment. Of four more advanced cases, with consolidation but no cavities, one is wholly cured, another is much improved, while in two cases the prognosis seems hopeless. In nine advanced cases of phthisis the treatment had no effect. Of the 16 cases treated, four are cured, three are much improved, one is very ill, and eight have died. They believe that this treatment is effective in simple phthisis, uncomplicated and not too far advanced. But it is useless when mixed infection has already developed. Tuberculous meningitis and peritonitis were also unaffected. One case with tabes mesenterica seemed to have improved upon this treatment.

The Influence of Climate Upon Experimental Tuberculosis.—Lannelongue, Achard, and Gaillard publish the results of their experiments on the influence of climate upon experimental tuberculosis, in the *Bulletin Medical*, (July 24, 1901, No. 58). Inoculated rabbits were sent to the seashore, country, and mountains, and some were kept in the laboratory. All sorts of lesions were found upon the death of the rabbits. They conclude that the individual plays the most important role, each rabbit reacting in a different manner to the inoculation. Therefore the results in the different climates will not bear comparison. But they believe that even more men can be found who have withstood the invasion of tuberculosis than rabbits, in all sorts of climates.

TOXICOLOGY.

Mushroom Poisoning.—Goldman (*Wiener klinische Wochenschrift*, March 21, 1901, XIV Jahr. No. 12)reports eleven cases of poisoning due to **agaricus torminosus**. The first cases were three children from two to fourteen years of age who had gathered the mushrooms, cut them up, and eaten them. The youngest one died in spite of all treatment, in 24 hours. Soon afterward, eight laborers, mistaking the agaricus for an edible mushroom, collected and ate them. Out of this number, two women who had eaten most heartily, died from five to six days afterward. Still, they only received their first treatment on the third day of illness, while all the rest received immediate attention. The agaricus is very common in the woods about Vienna all summer; it is yellowish white, stands about 4 cm. high, and burns slightly when tasted. It looks much like the "champignon." The poison in it is unknown. The symptoms are those ordinarily seen in cholera morbus, coming on about four hours after the mushrooms have been eaten. Goldman found the skin dry and icteric, pupils dilated, tongue deeply coated and tremulous, very slight fever, abdomen and epigastrium somewhat tender, much vomiting and severe diarrhea. At autopsy, acute gastro-intestinal catarrh and slight fatty degeneration of the liver, kidneys and heart were found. Goldman's treatment was tannin by mouth and rectum. As prophylaxis he recommends that the market officials and the people, especially the children, be taught to recognize the poisonous varieties of mushrooms.

Toxicomania.—In the *Bulletin Medical*, (July 31, 1901, No. 60) Paul Garnier and Wahl discuss the successive abuse of several poisonous drugs by one individual, a practice which, while always in existence, has become common in civilized countries during the past fifty years. Perhaps this is due to the increased number of degenerates. The first case which they report was a man of 28, who had once studied medicine for a few years. He began to smoke opium when in China with his regiment. Then he tried laudanum, morphin, cocain, and absinth, by which time melancholia had developed. The next case was a pharmacist of 29, who took morphin first at the age of 18. Then followed ether, camphor, bitters, cocain, and finally mania. Garnier and Wahl believe that this condition results from a peculiar psychic state occurring with mental degeneration; and that to overcome this mental degeneration the treatment must be directed not only to the acute, subacute, or chronic intoxication, but also to the individual's entire constitution. This condition they call toxicomania.

Poisoning by Oxalic Acid of Alimentary Origin.—In the *Journal des Sciences de Lille* (July 20, 1901, No. 29) Baroux discusses a special form of poisoning by the production of oxalic acid in the alimentary canal, with a chemical reaction. For the oxalates are found in the leaves and fruit of certain vegetables, such as tomatoes, spinach, salads, etc., as minute crystals. When fresh fruit containing citric acid it eaten with these vegetables, oxalic acid is set free. Baroux reports nine such cases, in one of whom, a young man, pain and acute gastro-enteritis followed a supper of spinach and pie cherries. In two children the same symptoms resulted from spinach and oranges. In all these cases the pain is localized in the right hypochondrium, for the oxalic acid cannot go far into the duodenum without being neutralized. Besides the corrosive action of the oxalic acid, the bacteria present help to raise the temperature up to 104°F. There is always some diarrhea, rarely vomiting. Nor do symptoms always follow the ingestion of oxalic-acid-containing greens and citric-acid-containing fruits, for some people are not easily susceptible. In children, however, the symptoms appear rapidly. Care should therefore be taken in the diet of children especially.

To Produce Diaphoresis.—Von Graife (*Med. Record*, July 6, 1901) gives the following:

℞

Pulveris camphorae	gr. ss-iss
Pulveris opii	gr. 1/4-1/2
Patassii nitratis	gr. iv
Sacchari	ʒ ii

M. et fiat Charta No. I.

S.: One powder in hot water at bedtime.

Formulae.

SKIN DISEASES.

Sunburn.—The following prescription is accredited to Dr. Thompson (*New York Medical Journal*, July 27, 1901):

℞

Bismuthi subnitratis	3 i
Petrolati	℥ i

M. et fiat in unguentum.
S.: To bespread well over the burned area.

Cutaneous Cancer.—Dr. Heidingsfeld (*Jour. Amer. Med. Assoc.*, July 13, 1901) recommends the following:

℞

Acidi arsenosi	
Pulveris acaciae	āā v
Cocainae hydrochloratis crystallizat	ii
Glycerini	ii
Aquae	q. s.

M. et fiat in paste.
S.: Apply locally

Erythema Intertrigo.—L.A. Duhring, in his book on *Cutaneous Medicine*, Part II, recommends the following prescription:

℞

Pulveris acidi borici	
Pulveris oxidi zinci	āā 3 iss
Pulveris amyli	3 v

M. S.: To be used as a dusting powder after the part has been thoroughly cleaned.

Urticaria.—L. A. Duhring, in his book on *Cutaneous Medicine*, Part II, advises this mixture where there is marked gastric disturbance:

℞

Magnesii carbonatis	
Bismuthi carbonatis	āā 3 ij
Tincturae rhei	f. ℥ jss
Syrupi zingiberi	f. ℥ j
Aquae	q. s. ad f. ℥ viii

M. S.: Shake. Teaspoonful in water after each meal.

Chronic Urticaria.—L. A. Duhring, in his book on *Cutaneous Medicine*, Part II, says this mixture has been found serviceable in lithemic cases:

℞

Potassii citratis	3 ii
Liquor ammonii acetatis	f. ℥ ij
Glycerini	f. 3 ij
Aquae	q. s. ad f. ℥ viii

M. S.: Two teaspoonfuls four times a day.

Herpes Simplex.—L. A. Duhring, in *Cutaneous Medicine*, Part II, uses the following lotion to soothe and dry the eruption:

℞

Zinci sulphatis	
Potassii sulphidi	āā ℈ i-3 j
Aquae	f. 3 vii
Alcoholis	f. 3 j

M. S.: Shake, and apply freely and frequently.

Dandruff Cure.—*The Bulletin of Pharmacy* (August 1901) gives the following recipe as a cure for dandruff:

Resorcini	3ij
Tincturae cantharidis	
Tincturae of capsici	āā f. 3 ss
Borax	℥ ss
Glycerini	f. ℥ j
Alcoholis	f. ℥ ij
Aquae	q. s. ad Oj

To Prevent Bedsores.—(*New Eng. Med. Monthly*, August, 1901; from *Md. Med. Jour.*):

℞

Aluminis	
Sodii chloridi	āā ℥ ss
Aquae	
Alcoholis	āā Oj

M. S.: Use twice a day locally.

Fly and Mosquito Bites.—(*Bulletin of Pharmacy*, August, 1901):

	Parts.
Olei myricae	10
Olei eucalypti	20
Ether	20
Alcoholis	70

Dissolve the expressed oil of bay in the ether, and the oil of eucalyptus in the alcohol. Mix the two solutions, and filter rapidly in a covered funnel.

This compound may be used for domestic animals as well as for man, or it may be placed about the house.

Erysipelas.—J. Hays (*New York Med. Jour.*, from *Jour. de Medicine de Paris*, May 19th) uses the following:

℞

Acidi carbolici	
Tincturae iodidi	
Alcoholis	āā f. 3 ss
Olei terebinthinae	f. 3 j
Glycerini	f. 3 iss

M. S.: For external application. Every two hours the part can be painted, as well as a small zone of the surrounding healthy tissues, and the whole covered with an antiseptic gauze.

Cutaneous Puritis.—Eichhorst (*Med. Record*, July 6, 1901) gives the following prescription:

℞

Potassii bromidi	℥ iiss
Extracti belladonnae	gr. ivss
Acidi carbolici	gr. xv
Extracti glycyrrhizae	q. s.

M. et fiat pillulae No. I.
S.: One four times a day.

Pruritis Vulvae in Diabetes.—Lutand advises the following (*Med. Record*, May 25, 1901):

℞

Acidi borici	℥ iss
Sodii biboratis	3 iss
Aquae distillatae	Ojj

M. S.: Apply freely.

EAR, NOSE AND THROAT.

Subnasal Sycosis.—(*Merck's Archives*, March, 1901):

℞

	Parts
Lanolinae	
Petrolati	āā xx
Glycerini	
Sulphuris sublimati	āā x
Zinci oxidi	xx

M. S.: Use as a paste.

Crusts and Fissures of the Nostrils.—(*Merck's Archives*, March, 1901):

℞

Ungenti ammonii hydrargyri	
Vaselini boratis	āā 3 iiss
Zinci oxidi	gr. xxx
Plumbi acetatis	gr. 1/4

M. S.: For external application.

Acute Nasal Catarrh.—Ferrier (*Miss. Med. Record*, June 1901) recommends this combination:

℞

Morphinae sulphatis	gr. v
Pulveris acaciae	3 ij
Bismuthi subnitratis	3 iv

M. S.: A pinch four or five times a day.

Hay Fever.—Coakley (*Jour. Amer. Med. Assoc.*, July 27, 1901) recommends the following to make the mucous membrane less sensitive to irritants:

℞

Menthol	gr. xl
Camphorae	gr. xx
Eucalyptol	3 j
Olei pini pulmilionis	f. 3 ss
Benzoini	q. s. ad ℥ ij

M. S.: Use in an oil atomizer, every two hours, if necessary.

Coryza.—(*N. Y. Med. Jour.*, August 3, 1901, from *Annales de pharmacie*, of Milan):

℞

Pulveris menthol	gr. iliss
Pulveris betol	gr. xxxviiss
Cocainae hydrochloratis	gr. viiss
Pulveris roasted coffee	3 j

M. S.: To be used as a snuff.

Coakley also recommends the following six weeks before an expected attack:

℞

Potassii iodidi	3 iv
Extracti grindeliae roberstae fludi	f. ʒ vi
Elixir simplicis.	
Spiritus vini rectifi āā q. s. ad	f. ʒ iv

M. S.: One teaspoonful well diluted in water three times daily.

The following is recommended by *Jour. des Prat.* (*Jour. Amer. Med. Assoc.*, July 27, 1901):

℞

Acidi acetici	*m* iv
Resorcini	gr. iij
Sodii chloridi	gr. viij
Aquae	f. ʒ ij

M. S.: Use as a local application.

For relieving the attacks the following is advised (*Jour. Amer. Med. Assoc.*, July 27, 1901):

℞

Heroin hydrochlorates	gr. j
Atropinae sulphatis	gr. 1/25
Caffeinae citratis	gr. xv
Salaphen	gr. lxxv

M. et fiat capsul No. XV

S.: One capsule every three hours.

Bronchitis (with profuse purulent secretion).—(*Med. Record*, May 25, 1901, from *Med. Times and Hospital Gazette*):

℞

Olei terebinthinae	*m* v
Mucilaginis	f. 3 j
Aquae	f. ʒ iij

M. S.: Tablespoonful at a dose.

When there is deficient secretion:

℞

Ammonii chloridi	3 ij
Potassii iodidi	gr. xij
Vini ipecacuanhae	*m* lxxx
Misturae glycerrhizae compositae	f. ʒ iv

M. S.: A tablespoonful at a dose.

NEURALGIA AND ALLIED CONDITIONS.

Toothache.—(*Medical Standard*, July, 1901). The following prescriptions are accredited to Danchez:

℞

Orthiformi.	gr. xv
Acidi carbolici	gr. xv
Camphorae	3ii
Chloral hydratis	3 i

M. S.: Dry the cavity and apply on absorbent cotton.

Or

℞

Cocainae hydrochloratis	gr. iss
Menthol	gr. xv
Acidi carbolici	gr. xv
Olei caryophylli	gtt. v
Alcoholis camphorati	f. 3 i

M. S.: Apply as above.

Acute Rheumatism.—(*Miss. Med. Record*, June, 1901, from *Pittsburg Free Dispensary*):

℞

Sodii salicylici	ʒ sss
Potassii iodidi	
Methyl salicylici	āā 3 i
Extracti cimicifugae fluidi	f. 3 ij
Spiritus vini rectifi	f. ʒ ss
Aquae	f. ʒ iij

M. S.: Teaspoonful three times a day.

Toothache.—Dr. Caumartin (*N. Y. Med. Jour.*, August 3, 1901, from *Echo Medical du Nord*, June 16, 1901):

℞

Acidi carbolici	
Cocainae hydrochloratis	āā 3 ss
Tincturae opii	
Spiritus chloroformi	āā *m* xlv

M. S.: Use on a pledget of cotton.

Lumbago.—Tirard (*Med. Record*, May 25, 1901) advises the following:

℞

Sodii salicylici	gr. x
Potassii iodidi	gr. v
Extracti sarsaparillae fludi	f. 3 ij
Aquae distallatae q. s. ad	f. ʒ ss

M. S.: A tablespoonful after meals.

Rheumatism in Children.—Swift (*Med. Standard*, July, 1901, from *Archives of Pediatrics*) advises the following preparation:

℞

Sodii salicylici	ʒ ss
Tincturae ferri chloridi	f. ʒ ss
Acidi citrici	gr. x
Glycerini	f. ʒ ss
Olei gaultheriae	gtt viii
Liquor ammonii citratis	f. ʒ viii

M. S.: Teaspoonful three to four times a day.

TUBERCULOSIS.

Tubercular Meningitis.—Malba (*New York Med. Jour.*, August 10, 1901, from *Jour. de Medecin de Paris*) advises the following as a sedative to combat the cries and convulsions:

℞

Stronti bromidi	gr. xv
Chloral hydratis	gr. viiss
Syrupi valerianae	f. 3 vj
Syrupi menthae piperitae	f. ʒ ij

M. S.: Given in teaspoonful doses every half-hour until quietness is obtained.

Internal Tuberculosis in Infants.—(*New York Med. Jour.*, August 10, 1901, from *Nouveaux Remedes*). For a child from five to ten years old.

℞

Argenti nitratis	gr. 3/20
Pulveris altheae	āā gr. 6/20

M. et fiat in pillulae No. I.

S.: One pill daily for three consecutive days after the administration of a light saline aperient.

Tuberculosis.—Ravagli (*Med. Record*, July 6, 1901) gives the following:

℞

Iodoformi	gr. i-ij
Strychninae sulphatis	gr. 1/40
Arseni iodidi	gr. 1/12
Balsami Peruvian	gr. ii-iv

M. et fiat in pillulae No. I.

S.: One to three pills a day.

Emulsions.—Burtenshaw (*Med. Record*, July 6, 1901) recommends the following:

℞

Olei ricini	f. ʒ iss
Tincturae lavandulae compositae	gtt. v
Mucilaginis acariae	f. ʒ ss

M. S.: Rub well in mortar. A tablespoonful for a dose.

Or,

℞

Olei morrhuae	f. ʒ v
Olei amygdalae ainarae	gtt. x
Creosoti	3 ss
Mucilaginis acaciae	f. ʒ iij

M. S.: A tablespoonful at a dose.

Or,

℞

Santonincae	gr. xii
Olei ricini	
Syrupi tolu	āā f. ʒ iss
Mucilaginis acaciae	f. ʒ iij

M. S.: Tablespoonful every four hours.

Cough in Phthisis.—Daly advises this prescription (*Med. Record*, July, 6, 1901):

℞

Camphorae	gr. ij
Herion hydratis	gr. 1/12
Creosoti	*m* j

M. et fiat in pillulae No. I.
S.: One pill when necessary.

Pulmonary Tuberculosis.—(*Med. Record*, May 25, 1901, from *Merck's Archives*):

℞

Guaiacol	f. 3 iv
Creasoti	āā f. 3 iv
Olei morrhuae	Oj
Olei cinnamoni	f. 3 ij
Olei aurantii amari cortex	f. 3 ss

M. S.: Teaspoonful three times a day for first week; second week two teaspoonfuls three times a day; third week three teaspoonfuls; fourth week four teaspoonfuls. Continue this dose if stomach remains good, if not, return to two teaspoonfuls three times a day.

TYPHOID FEVER.

Typhoid Fever.—To be used as an intestinal antiseptic and to relieve tympanities (*Jour. Amer. Med. Assoc.*, August 10, 1901):

℞

Naphthol	gr. xl
Salol	3 ss
Pulveris aromatici	gr. xv

M. et fiat in charta No. XII.
S.: One powder every four hours

Typhoid Fever.—The following is advised as a heart tonic (*Jour. Amer. Med. Assoc.*, August 10, 1901):

℞

Caffeinae citratis	gr. viiss
Tincturae strophanthi	f. 3 j
Aquae	q. s. ad f. ℥ ij

M. S.: Shake. One teaspoonful every four hours.

Typhoid Fever.—For the diarrhea in typhoid fever Yeo recommends the following (*Jour. Amer. Med. Assoc.*, August 10, 1901):

℞

Pulveris ipecacuanhae et opii	gr. v
Acidi tannici	gr. x
Pulveris acaciae	℥ vi

M. S.: Mix the above with two ounces of warm water, and inject after each movement of the bowels.

And internally the following:

℞

Bismuthi salicylici	
Bismuthi carbonatis	āā gr. xl
Pulveris acaciae	3 ij
Aquae	q. s. ad f. ℥ ij

M. S.: A dessertspoonful every three hours until the diarrhea is relieved.

CHILDREN'S DISEASES.

Scarlet Fever.—L. Starr (*American Textbook of the Diseases of Children*) recommends the following for persistent nausea:

℞

Aquae cinnamoni	
Liquoris calcis	āā f. ℥ j
Tincturae gelsemii	f. 3 ss

M. S.: Teaspoonful every hour.

Rubella.—W. T. Plant (*American Textbook of the Diseases of Children*) advises this prescription for the treatment of sore throat, either with the atomizer or by gargling:

℞

Potassii chloratis	3 iss
Glycerini	f. 3 iij
Tincturae ferri chloridi	f. ℥ j
Aquae	q. s. ad f. ℥ viii

M. S.: Use as a gargle, etc

Infant Feeding.—(*Starr's American Textbook of the Diseases of Children*). The following preparation usually agrees with an infant of ten months:

℞

Cream	f. 3 ss
Milk	f. ℥ iv
Sugar of milk	3 j
Water	f. ℥ iss

Serous Diarrhea of Nurslings.—(*Merck's Archives*, March, 1901):

℞

Atropinae sulphatis	gr. 1/10
Aquae distillatae	*m* f. 3 viiss

M. S.: One to three drops may be given, but not more than three drops.

Pertussis.—(*Merck's Archives*, March, 1901):

℞

Zinci sulphatis	gr. iv
Atropinae sulphatis (sol 1%)	gtt. xii
Syrupi zingiberi	f. 3 iv
Aquae cinnamoni	f. ℥ iij

M. S.: Teaspoonful twice a day; later three times a day for a child a year old. The dose of atropine solution may be increased by one-fourth drop every third day, watching the effect.

Pertussis.—This prescription is ascribed to Shoemaker (*Med. Record*, July 27, 1901):

℞

Tincturae lobeliae	f. 3 ij
Sodii bromidi	3 iij
Spiritus altheris nitrosi	f. ℥ j
Syrupi limonis	q. s. ad f. ℥ iij

M. S.: Half to one teaspoonful every one to two

DIGESTIVE TRACT.

Acute Intestinal Catarrh.—J. H. Musser (*Hare's System of Practical Therapeutics*) gives the following formulae:

℞

Benzo-naphthol	gr. ij
Bismuthi salicylatis	gr. v
Resorcini	gr. ij

M. et fiat in charta No. I.
S.: One every three hours

Followed by

℞

Hydrargyri chloridi mitis	
Sodii bicarbonitis	āā gr. v.

M. et fiat in Charta No. I.

Diarrhea and Dysentery.—(*Merck's Archives*), March:

℞

Bismuthi subnitratis	3 iv
Pulveris myristicae	℥ ij
Pulveris cretae	3 ij
Syrupi zingiberi	f. ℥ iij

M. S.: Shake. Teaspoonful after each movement of the bowels

Flatulence.—Hollister (*Med. Record*, May 27, 1901):

℞

Pulveris zingiberi	
Pulveris acaciae	
Sodii bicarbonitis	
Bismuthi subnitratis	
Sacchri	āā 3 ij

M. S.: Teaspoonful in water, as needed.

Pain in Hyperchlorhydria.—M. Perochaud gives the following (*New York Med. Jour.*, July 13, 1901, from *Gazette hebdomadaire de medecine et de chirurgie*, May 30, 1901):

℞

Extracti cannabis indicae	gr. 15/100
Pulveris cocae	gr 75/100
Pulveris belladonnae	gr.15/100
Morphinae hydrochloratis	gr.1/65
Pulveris glycrrhizae	q. s.

M. et fiat in pillulae No. I.
S.: One to four pills daily.

Fermentative Diarrhea.—C. W. Canan (*Med. Record*, July 6, 1901) gives this prescription:

℞

Pulveris ipecacuanhae	gr. x
Pulveris populus	3 i
Pulveris capsici	3 is
Pulveris nucis vomicae	gr. x

M. S.: To be taken as one dose.

Diarrhea Mixture.—(*Bulletin of Pharmacy*, July, 1901):

℞

Tincturae opii deodorati	
Tincturae rhei	
Tincturae lavandulae compositae	āā f. ʒ j
Tincturae capsici	
Tincturae camphorae	
Chloroformi	āā f. 3 ij
Olei cinnamoni	
Olei menthae piperitae	āā f. 3 ss
Spiritus vini gallici	f. ʒ iv

M. S.: One-half to one teaspoonful at a dose. Repeat every two to three hours if necessary.

Dysentery.—R. A. Mate (*Med. Standard*, July, 1901, from *British Med. Jour.*) is accredited with the following:

℞

Magnesii sulphatis	3 j
Acidi sulphurici diluti	
Tincturae opii	āā *m* x
Quininae sulphatis	gr. j
Hydrargyri perchloridi	gr. 1/32
Aquae menthae piperitae	q. s. ad f. ʒ ss

M. S.: This dose is to be taken every three hours.

MISCELLANEOUS.

Malarial Hematuria.—J. L. Dawson, Jr. (*The American Textbook of Applied Therapeutics*) gives the following:

℞

Quininae disulphatis	gr. j-ij
Acidi Arseniosi	gr. 1/20
Mangani dioxidi	gr. j
Strychniae sulphatis	gr. 1/40

M. et fiat in pillulae No. I.
S.: One after each meal.

Diabetes Mellitus.—(*Merck's Archives*, March, 1901):

℞

Ammonii carbonatis	
Acidi citrici	āā gr. x
Aquae	f. ʒ j

M. S.: To be taken three times a day.

Sprains.—(*Merck's Archives*, March, 1901):

℞

Olei terebinthinae	
Acidi acetici	āā f. ʒ ij
Olei lavandulae flori	f. 3 j
Yolk of one egg	
Aquae	q. s. ad. Oj

M. S.: Apply as a liniment two or three times a day.

..Cardiac and Renal Dropsy.—(*Merck's Archives*, March, 1901):

℞

Extracti scillae fluidi	
Extracti jalapae fluidi	āā f. 3 iv
Extracti pilocarpi fluidi	f. ʒ j
Extracti digitalis fluidi	gtt. xx
Potassii nitratis	f. 3 v
Spiritus frumenti	f. ʒ ij

M. S.: Teaspoonful every three hours.

Chalazion.—Strzembinzi (*New Eng. Med. Monthly*, August, 1901) says that by nightly applications of this ointment the above disease can be cured in from two to ten weeks:

℞

Iodidi puri	gr. iii
Potassii iodidi	gr. vj
Lanolini	ʒ j
Petrolati liquidi	
Aquae distillatae	āā f. ʒ ijss

M. et fiat in unguentum.
S.: Apply locally.

Malarial Fever.—A. Laveran (*The American Textbook of Applied Therapeutics*) recommends the following:

℞

Quininae hydrochloratis	gr. xv
Sodii chloridi	gr. xij
Aquae destillatae	f. 3 iiiss

M. S.: To be used in an intravenous injection.

External Hemorrhoids.—J. M. Matthews *Hare's System of Practical Therapeutics*):

℞

Menthol	gr. xl
Vaselini	ʒ j

M S.: Apply to the parts after washing.

Internal Hemorrhoids:

℞

Ferri sulphatis	gr. xij
Cocainae hydrochloratis	gr. viij
Vaselini	ʒ j

M. S.: Apply to the protruded part.

Fissure of the Anus.—J. M. Matthews is accredited with the following (*Hare's System of Practical Therapeutics*):

℞

Hydrargyri chloridi mitis	gr. iv
Pulveris opii	gr. ij
Extracti belladonnae	gr. ij
Unguenti sambuci	3 j

M. S.: To be applied frequently.

Gonorrhea Vaginitis.—(*Med. Record*, May 25, 1901, from *Texas Clinic*):

℞

Methylene blue	ʒ iiss
Alcoholis	f. 3 iij
Potassii iodidi	gr. iij
Aquae	f. ʒ vi

M. S. Apply by means of tampons to posterior vaginal farinx.

Paralysis Agitans.—M Bourneville recommends this prescription (*New York Med. Jour.*, August 10, 1901, from *Gazette hebdomadaire de medecine et de chirurgie*, July 11, 1901):

℞

Liquor potassii citratis	3 iiss
Glycerini	
Aquae distillatae	āā f. 3 j

M. S.: To be used hypodermically, sixteen minims at a dose.

Mercurial Salivation.—Bartholow (*Med. Record*, May 27, 1901):

℞

Acidi tannici	3 j
Melis rosarum	ʒ ij
Aquae	f. ʒ vi

M. S.: Use as a gargle.

Hemorrhoids.—(*Jour. Amer. Med. Assoc.*, July 27th, 1901):

℞

Tincturae catechu	f. 3 ij
Aquae	f. ʒ ij

M. S.: First clean the parts with soap and inject the above.

Chorea.—H. D. Chapin (*Med. Record*, July 6, 1901) uses the following prescription:

℞

Liquor potassii arsenitis	f. 3 ii-iij
Ferri et ammonii citratis	3 ii
Glycerini	f. 3 ss
Aquae	f. ʒ iij

M. S.: Teaspoonful three times a day.

Lithemia.—(*Merck's Archives*, February, 1901):

℞

Sodii bicarbonatis	gr. xv
Spiritus ammoniae aromatici	*m* x
Infusi gentianae compositae	q. s. ad f. ʒ i

M. S.: For one dose. To be taken three times a day, five minutes before meals.

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The Death of the President.—The death of President McKinley has plunged the entire Republic deep in sorrow. The assassination in its startling suddenness came like a bolt from the blue. Peace, Prosperity and Plenty is not an alliteration which breeds disciples of anarchy. Our country, laden with the fruits of the fertile soil, listening to the noisy hum of the huge manufactories, all betokening an era of commercial solidity, may well be astounded at this dastard's deed.

It is but fitting that as medical men we do our part to study well the mental conditon of the anarchist and devise, as far as in us lies, the means of eradication which the whole civilized world demands. Alienists in our ranks owe a debt to man. All mental cases which approach such conditions as would inspire assassination must be recognized, and, being early recognized, preventive medicine once again may assert its advantages over treatment of whatever sort when the deed is done.

We must demand stringent legislation, wisely conceived and intelligently executed. Anarchy, the plague of social life, must find no fit soil for development. In a healthy mind such infection is not possible. The unhealthy minds are, in part at least, under our hands for treatment. May God guide our hands!

Treatment of Tuberculosis with Urea.—In our previous issue we called attention to this new treatment of tuberculosis suggested by H. Harper in *The Lancet* for June 15th, 1901. Harper's treatment was by no means an exclusive one, the urea being associated with a free use of butcher's meat and 24 grams daily, of sulphate of iron together with small doses of creosote. In a paper by Arthur H. Buch read before the recent Congress on Tuberculosis in London, and published in full in the Philadelphia Medical Journal for Sep. 14, the author details seven cases of tuberculosis of the skin (lupus) and of the lymphatic glands treated with urea in doses of 20, 30, 50, and even 60 grams three times a day, dissolved in plain water. The results reported are marvelous as to rapidity and completeness of cure. Other remedies have however acquired reputation from results scarcely less striking, reputations which had but a passing existence. This may be true of the urea treatment but it should be tested at once, as we have no doubt it will be with a view of determining the truth of the effects claimed for it.

Buch attempts in the article referred to to explaine the rationale of the action of the drug, premising that in Calcutta the urine of the rhinoceros is bought and consumed internally by the native in cases of lung disease. In seems that urine is obtained from the Zoological Gardens and as much as 60£ are received annually for urine thus sold. We have not space to give his reasoning but the conclusion is conveyed by the following paragraph. "We shall then have established the curious fact that an apparently waste product, the result of a process of reduction of oxidation of protoplasm, on being passed through the mill, so to speak, a second time assists in building up tissues similar to those from which it was originally derived."

Unlike some other remedies for tuberculosis as for example tuberculin which requires to be used hypodermically, the administration of urea is easy and painless and morover its effects are said to appear within a comparatively short time. Hence its true value can be determined in a corresponding period. As the remedy is at least harmless it is to be hoped that those in a position to try it will do so at an early date.

The Knowledge of the Action of Drugs.—The physician of the future must be better grounded in a branch of the curriculum, which is at present almost entirely neglected in our medical schools. We refer to the study of pharmacology. Synthetic chemistry has supplied us with so many means of satisfactorily treating many pathological conditions, that the rational employment of the products of the truly scientific work, which the chemical laboratories of the world have produced, becomes a necessity. Granting this it is at once apparent that a more thorough knowledge of the action of these drugs, and of drugs in general, is not only something to be desired, but is absolutely imperative. Current medical literature is filled with the claims of many of these new remedies, and for the most part these

claims are based upon purely empirical employment. The scientific demands of our profession can in no way sanction this "hit or miss method" of treatment. The physiological actions of drugs must be carefully studied, and the facts learned in the laboratory must be applied rationally. Much of the so-called "therapeutic nihilism" represents the ignorance of the great mass of the profession upon this very subject. The empirical prescribing of a practically unknown agent will in most cases in no way aid the morbid condition, and the acknowledgement of the failure of many drugs when employed in this manner has filled many physicians with a spirit of doubt as to the efficacy of drug treatment. A scientific application of facts which have been witnessed in the laboratory would insure the selection of the proper drug for the particular case. It would avoid pernicious polypharmacy, or the other extreme, therapeutic nihilism. At present the profession is in a sad state of ignorance upon many elemental facts of pharmacology, and there is a disposition to go to one of the two extremes. The tremendous number of synthetic products, which are appealing for support, must be judged upon their merits, or ignored entirely. In view of the strides of synthetic chemistry, we are forced to acknowledge that it has supplied us with a host of valuable agents, and while among its products are numbers which have no therapeutic application, it will take education which means discrimination, based upon detailed knowledge of drug action, to determine this point.

Small Pox and Vaccination.—It is sometimes surprising to hear of men famous in the arts, literature, or some field of science, who hold peculiar views upon subjects on which, as medical men, we would wish to have them set right. The case we have in point is that of Alfred Russel Wallace and his views upon vaccination. Mr. Wallace, as an evolutionist, holds high rank. He is a man of wide learning and of no mean scientific reputation. Evolutionists regard him a co-discoverer with Darwin of the Darwinian theory. In a work which has reached considerable popularity since its appeared in 1898, and which is sold under the popular title: "The Wonderful Century", he devotes some 100 pages to the exposition of: "Vaccination, a Delusion". The facts which Mr. Wallace has collected, have been put together with a rare amount of prejudice and preconceived conviction that but one side deserved attention, and that side the correct interpretation of his premises. Medical men are familiar in general with the position of the anti-vaccinationists and hearing all that may be said upon their side, the scientific men of the profession including every leader of thought within its ranks, every name that is associated with some distinguished attainment, all fail to see the force of such arguments as Mr. Wallace and many others bring forth. It is not the purpose of this editorial to enter into the specific denial of Mr. Wallace's article or to show how fuller study of the statistics and the statements which are set forth, would change completely the conclusions at which he arrives. In general, we may say that the rules of hygiene which Mr. Wallace insists, will stamp out the disease if followed, without recourse to vaccination, are excellent. Preventive medicine takes full cognizance of this point. Personal cleanliness and proper sanitation will do much in the future to stamp out all manner of disease, and will aid especially in preventing great epidemics, but such a process means general education of the masses to a high standard of familiarity with the laws of hygiene, and this must be brought about very gradually. In the meantime, such a disease as smallpox will be continuing its ravages unless we use the preventive measure of vaccination, which makes its subjects immune to the disease whether they are cleanly or in the most unfavorable surroundings. This presupposes that the vaccination be properly done, that lymph be used which is free from all contamination and which is antiseptically prepared, and that the technique of vaccination be properly carried out. The fact that many statistics go to prove that hundreds who have been vaccinated, have contracted the disease and died, exemplifies for the hundreth time the familiar statement that it is a most difficult matter to form sound conclusions on the study of figures alone, without the full knowledge of the facts on which these figures are based. No heed is paid, in Mr. Wallace's conclusions or those of others, to the fact that the vaccination in a large proportion of cases was not properly done and to the further fact that such patients may not have been vaccinated for many years. In this connection we must not forget that the physician makes no claim to perpetual immunity following vaccination, but insists that when no great epidemic is prevalent, vaccination will confer immunity for perhaps seven years at the longest; but that in the presence of an epidemic, all persons should be re-vaccinated and that all of these vaccinations should "take." Many of the opponents of vaccination have a horror of contracting other diseases from the inoculation, and syphilis is always sighted as one of the most horrible diseases to which the innocent are subjected. That this is quite impossible when a proper bovine virus is employed goes without saying.

This subject has been threshed over for years, and an immense number of intelligent and unintelligent contributions have appeared in the columns of medical journals and the daily press, but the

conviction remains among a very large percentage of medical men, that it is to vaccination we owe the almost total disappearance of smallpox in the deadly forms which ravaged the old world during the past centuries. Further, it is to vaccination that we owe the almost innocouous character of the disease when it does now appear, and while we are educating the masses to a proper appreciation of sanitation and personal cleanliness, we must vaccinate them to protect them against smallpox, seen in the attenuated form. These remarks are not untimely in connection with the fact that a number of cases of mild smallpox have appeared in Philadelphia during the past weeks.

Therapeutics of Puerperal Eclampsia.—The recent progress that has been made in the management of that most distressing of obstetric complications, puerperal eclampsia, is very gratifying. This is beyond controversy a direct outcome of the more accurate knowledge of the pathology of the condition. While long attributed to a kidney-breakdown this is but an expression of the ignorance of the profession as to the true etiology of the disease, an ascribing of the cause to an effect. It is now known that puerperal eclampsia is a true toxemia—call it uremia, if you will—the primary effect of which is a general arteriole contraction. The first manifestation of this contraction is albuminuria resulting from a pale and fatty kidney which cannot work because it is insufficiently nourished. The next and final manifestation is an irritation of the brain-cortex whereby an eclamptic seizure is produced, this irritation resulting from a cortical congestion secondary to and consequent upon an anemia of the base where the arteriole contraction is marked. The toxins of unknown origin that are circulating in the blood and which are the cause of all the trouble, are now known to gain entrance into the maternal circulation through an imperfect liver-metabolism. It is thus by a process of deduction that the liver is now regarded as the organ largely at fault in the development of puerperal eclampsia. Hence has arisen a decided change in the therapeutics of the disease. The administration of calomel in daily doses in one-half to three-quarters of a grain or more during the last three months of gestation so frees the liver of the toxic accumulations that the toxicity of the blood is materially lessened and the danger of eclampsia is thereby greatly diminished. Such a use of calomel cannot be too highly commended, and this must be regarded as a marked improvement in the prophylaxis of the disease. After the establishment of the status eclampticus there are two great indications for treatment. These are the elimination of the poison from the system and the correction of the general arteriole spasm. Laying aside the question of venesection, which has a well established field in the plethoric woman, but which is absolutely contraindicated in the anemic cases, we have two valuable remedies at our command to meet the indications stated. These are tincture of veratrum viride and hypodermoclysis. Injections of normal salt-solution are especially valuable in this and other forms of toxemia in that they not only dilute the circulating poisons and stimulate the general circulation, but they also act as very efficient diaphoretics and diuretics. As is well known, during the period of eclamptic seizures the kidneys fail abosolutely to respond to the action of the best of diuretics. As the vessels distend, however, under the increased volume of fluid following the introduction of saline solution, a certain amount of the arteriole contraction is overcome, and the kidneys begin to perform their functions. This action is still further favored by the relaxing influence of full doses of nitroglycerin, and in suitable cases by the use of veratrum viride, which is especially directed to the overcoming of the arteriole spasm. It is not necessary to review here the history of veratrum viride in eclampsia. It is doubtless well known to most of our readers. Especially under the impetus given to its use by our professional brethren of the South it has now attained a degree of popularity in the treatment of puerperal eclampsia which is astonishing. The reports of successes following its use are numerous. Altogether we may safely assume that with the introduction of calomel, hypodermoclysis, and veratrum viride into the treatment of puerperal eclampsia a remarkable and rational advance has been made in the therapeutics of one of the most appalling affections that woman is heir to.

The Treatment of the Tachycardias of the Menopause.—Often, in the case of a female patient who complains of cardiac symptoms, it is found, on questioning, that the menopause has just passed or that the patient is undergoing the changes attendant upon that period of life. Before outlining the treatment in such a case, the physician should decide positively whether the cardiac difficulty is organic or functional. Bailleau has made the tachycardias of the menopause the subject of a Paris Thesis, (*Gazette Hebdomadaire de Medecine et de Chirurgie* June 16, 1901.) These cardiac symptoms may be due to the lighting up of an old organic lesion by the menopause or, which is more frequent, the symptoms are purely functional. The functional cardiac affections are sometimes of a reflex nature and are dependent upon an affection of the uterus, of the liver, of the stomach or of the nervous system,

which, in turn, is due to the menopause. In other cases, these functional tachycardias are not associated with any demonstrable organic change and are due entirely to the nervous disturbance produced by the menopause. The pathogenesis of the latter class of cases is complex; according to Huchard, they are dependent upon arterial hypertension, which, in turn, is the first indication of arteriosclerosis. On the other hand, Clement and Kisch believe them to be purely nervous manifestations dependent upon excitation of the sympathetic system. Bailleau believes that both causes are operative in the production of these disorders. The treatment of these cardiac affections varies with the cause. If an organic disease of the stomach, the liver, the uterus or the nervous system can be discovered, which, by its reflex influence, disturbs the regularity of the heart's action, treatment should be directed to the relief of this affection. On the other hand, in those cases of functional cardiac disease due to sympathetic nerve disturbance, which are so difficult to treat, the author recommends the use of ovarian substance. He advocates this form of medication because he believes that the ovarian insufficiency that develops at this time of life is the cause of the nerve disturbance that results in the cardiac phenomena. This form of treatment presupposes an internal secretion from the ovary, concerning the existence of which there is presumptive evidence but no actual proof. However, the drugs that have long been used in the treatment of these palpitations are notoriously inefficient and ovarian substance can do no harm. It is even possible that it may prove, after extended clinical experience, to be of value in a certain class of cases. Bailleau does not give the details of administration, but ovarian substance is obtainable in the United States in tablets that represent a definite proportion of the fresh ovary of the pig.

Poisons and Poisoners from Two Points of View. Modern investigation is ruthlessly shattering some of the cherished chronicles of medieval history. There is an air of mystery which accompanies the recitals of the sudden deaths of so many of the important personages of their times, and we hear of wondrous poisons of subtle power, the like of which is quite unknown to the chemist of the present day. The weaver of romance does not dwell beneath the roof of the seeker after truth for its own sake. His words savour of alchemy and belief in the occult and mysterious which were current at that day. We are iconoclastic merely to show that it was the spirit of the day to interpret romantically what modern science would have summarily reduced to fact. The age of romance does not bear the strong light of investigation. Superstition and credulity are handmaidens of these wondrous chronicles. It is now known that the claims which were long made for a knowledge in the dark centuries of the most potent poisons have been much exaggerated. Sudden death from any cause was at once attributed to poison, and the stories of the mysterious deaths of prominent persons became so distorted in the telling that the original truth was scarcely recognizable. From the standpoint of this matter of fact twentieth century we are able to interpret certain findings long ago set down as supporting quite erroneous conclusions. In connection with some of these celebrated and so-called poisoning cases the August number of the **Practitioner** contains an interesting article detailing at some length the sad case of Henrietta of England, Duchess of Orleans (*obiit* 1670). The writer quotes the magnificent funeral oration of Bossuet, in which he tells with full heart, "How Madame passed from morn until the even, like unto the grass in the fields. In the morning she bloomed with what graces you all know; in the evening she withered; in nine hours the work was completed." The death of this beautiful and beloved young Princess is still one of the mysteries of history, and the writer in the **Practitioner** uses it as a text to illustrate the readiness with which the deaths of prominent persons were described as due to poisoning. A careful study of the history of the case from such information as we have inclines the author to believe that the death of the Princess was due to natural causes, the perforation of a simple peptic ulcer. It has been contended that the results of the autopsy go to prove that she died from the effects of corrosive sublimate administered in a cup of chicory water, an extremely unpleasant and very unlikely potion for the Princess to have swallowed. There is no doubt, whatever, of the very great prevalence of the method of getting rid of famous persons through the agency of various poisons, but it is probable that however skilled were the alchemists of that time, we have lost but little of their wondrous knowledge. It is far more probable when the prejudice and the superstition of the times in which poisoners flourished is considered, that many died from natural causes who were supposed to have perished by the poisoner's hand. Medical men of the middle ages were more inclined to interpret the post-mortem findings to suit their previously formed convictions, rather than let the record of the autopsy speak for itself and correct any misconceptions of the attending physicians.

Original Articles.

CARIBOU OR WATER-BUFFALO VIRUS.

By CHARLES A. CATTERMOLE, Captain and Assistant Surgeon, U. S. Vols.

Paranaque, P. I.

The accompanying photograph shows a typical vaccination scar and small-pox marks in a Filipino who had an attack of variola in 1892.

While vaccinating a large number of Filipinos at this place in May of the present year, as an experiment, I inoculated a number of persons with caribou virus who had unmistakable pox-marks on their faces, the result of a previous attack of variola. I believed at the time that none of these vaccinations would be successful. I was somewhat surprised after a few days to have one of these men complain of his arm and of pain in the axilla when the arm was moved. The vaccination showed a typical appearance which ran the usual course of vaccinia.

The inference to be drawn from this case is that an attack of variola does not invariably protect the subject from vaccinia with caribou virus, but we cannot say that this person would not be protected from another attack of variola.

The course of vaccinia with caribou virus does not differ essentially from that produced by bovine virus. The potency of the former seems to be greater and the virus is better able to withstand the deteriorating effects of a hot climate.

American soldiers who repeatedly resisted a successful vaccination with bovine virus while in the United States would yield promptly to an inoculation with caribou virus. This virus is carefully prepared at the Government Vaccine Stations in Manila, and Iloilo, Island of Panay. It is put up in sterile tubes of 100 units each, corked, and the corked end sealed with paraffin. I have found virus prepared in this manner to be active after three months of hot, tropical weather.

My method of vaccinating has been to cleanse the skin with soap and water, using a stiff nail brush, then mop with alcohol. After the latter has evaporated the abrasion is made with a needle which has been disinfected by placing it in pure carbolic acid and then washing in sterile water. The virus is applied and pricked into the wound with a sharpened chicken quill, which has previously been cleansed in the same way as the needle; when the wound is dry the subject is sent away.

After the vesicle has formed and broken down the wound is cleaned daily with sterile water and an antiseptic gauze bandage applied. If the wound becomes infected it is necessary to stop the process with antiseptic dressings.

After observing many hundreds of cases treated in various ways I am convinced that the above method is the most successful.

THE TREATMENT OF EXOPHTHALMIC GOITRE WITH SPECIAL REFERENCE TO THE USE OF SODIUM PHOSPHATE.

By JOSEPH SAILER, M. D.,

of Philadelphia.

Pathologist to the Presbyterian Hospital.

Exophthalmic goitre ia a disease that has hitherto practically defied the arts of the therapeutist. To a certain extent a patient may be relieved of some of the more disagreeable features, and there may, in fact, be a distinct improvment in the objective signs, but neither relief nor improvement is likely to be permanent, and both are due more to hygienic measures than to any active intervention. Nevertheless, as it is a chronic disease rarely terminating fatally, different methods of treatment have been suggested time and again, and employed with more or less asserted success by various men. Möbius, in a recent article upon the subject (Nothnagel's System, Vol. 22, Vienna 1896) divides the methods now, or recently in use, into (1) the general management of the case; (2) the electrical treatment; (3) the administration of drugs; (4) organotherapy; and (5) operative interference.

The various measures that have been adopted are partly designed to relieve the disease by eradicating some theoretical cause, partly by acting upon the supposed seat of the disease, and partly are purely empirical. According to Möbius the disease is really an intoxication due to hyper-or perverted secretony activity of the thyroid gland, and he is therefore inclined to believe (Neurologisches Centralbl. 1898, p. 1113) that operative interference, that is, the removal of part of the gland with the idea of diminishing the amount of toxic substance that is secreted, is the best means of cambating it. This theory has of late rapidly gained adherents. Dupie and Grillain *Bull. et memoires de la Societe* Dupie and Grillain . *Bull. et memoirer de la Societe medicale des Hôpitaux de Paris*, May, 1900) report, in support of it, a case of exophthalmic goitre asso-

ciated with tetany; although tetany is also a symptom of the status thyreopriva. Dinkler (*Münchener med. Wochenschrift*, 1900, No. 21) describes two autopsies that tend to confirm it, and Lanz (*Correspondenz-Blatt für Schweizer Aerzte*, 1899, No. 23) Breuer (*Wiener klin. Woch.* 1900, No. 28), and Vetlesen (*Norsk. Mag. f. Lägevidensk*, 1899, XIV. Abs. in *Neurol.. Centralbl.* 1901, p. 270) have expressed themselves in favor of it.

A variety of operations have been suggested. Of these the most obvious is the total or partial removal of the thyroid gland itself. Tillaux (*Bulletin de l'Academie de Med. de Paris*, April 27th, 1880, *Bull. de la Soc. Chir.* August 3rd, 1881) was probably the first to undertake this, and described the operation before the Academy of Medicine, in Paris, in 1880, Four years later Rehn (*Berlin klin. Woch.*, 1884, Nr. 11) reported four cases, and ten years later he stated (*Deut. med. Woch.*, 1894, Nr. 12) that three cases still under observation, had remained healhty. He then reported a fifth case in which recovery had also ensued. Since then a great number of these operations have been performed, and Sorgo (*Centralbl. für die Grenzgebiete der Medicin und der Chirurgie*, Vol. I) has been able to collect 174 cases with the following results:

Cured	48
Much Improved	27
Distinctly Improved	62
Not improved or worse	11
Died	24

In two cases the results were not given. Although the results, insofar as permanency was concerned, were favorable, the very serious mortality of 13.8% is sufficient to cause hesitation, particularly as the disease itself is rarely directly fatal. And Saenger (*Münch. med. Woch.*, 1897, No. 14) and Sorgo have both stated that operative interference is unjustifiable, excepting as a last resort.

Modifications of these operations are ligation of the thyroid arteries, or the complete removal of the gland, as was practiced by Thomsen (*Hospital Tid.*, 1898, No. 11; abr. in *Neur. Centralbl.*, 1899, No. 942), followed by the administration of thyroid tablets to prevent myxedema.

Quite recently Schulz (*Wiener med. Blätter*, 1900, No. 14, *et seg.*) has reported twenty cases operated upon, by Kümmel, with excellent results in all the post operative period of observation, having lasted in some cases for as long as eleven years, and Sorgo, the best authority on the subject of operation, states, in his criticism of this paper (*Neurologisches Centralblatt*, 1901, p. 272), that the justifiabilty of the operation can no longer be doubted. Vetlesen attempts to explain the occasional failure of partial thyroidectomy, by the supposition that occasionally the remnant of the gland proliferates.

One of the most ingenious methods of treating exophthalmic goitre in accordance with their theory, was that of Lanz (*Correspondenz Blatt für Schweizer Aerzte*, 1899, No. 23), who removed the thyroid glands from two goats and fed their milk to two cases of exophthalmic goitre. His theory was that the toxic substances of excessive thyroid action should be counteracted by those of cachexia strumipriva, and that the latter should be found in the milk of the goats. The results were improvement in all the symptoms, but apparently, not cure.

Diametrically opposed to the thyroid intoxication theory is the treatment by thyroid gland products. Although a considerable number of successful results have already been reported, the unsuccessful ones are considerably in excess, and the prevailing opinion is decidedly adverse to this treatment. Vetlesen is particularly vigorous in his objection, although it is possible that some of complicated cases may be benefited by it. Thus Leeper (*British Medical Journal*, Jan. 27, 1900) mentions a case associated with acute mania, that was cured by moderate doses of thyroid extract. A variety of the organotherapeutic methods is the administration of thymus extract. Vetlesen suggest that it is worth a trial, and Parker (*British Medical Journal*, Jan. 7, 1899), has used it in several cases with very doubtful benefit. Hanzel, on the other hand (*Wiener klin. Woch.*, 1897, No. 46), observed great improvement in a case that had grown worse upon thyroid extract.

Based upon the theory that exopthalmic goitre is due to disease of the cervical sympathetic, Jonnesco (*Gaz. des Hôpitaux*, 1898, No. 45) removed the ganglia in five cases of the disease, with some rather indefinite improvement. Abadie (*Gaz. des Hôpitaux*, 1897, No. 77), who believes with Destres, that the sympathetic is composed of vaso-dilators and vaso-constrictors, and that therefore the paralytic and irritative symptoms of exophthalmic goitre can be explained by disease of it alone, recommended partial extirpation of the upper ganglion, and Valencon (*Gaz. des Hôpitaux*, No. 69) suggested that section of the sympathetic above the middle ganglion would be sufficient. A number of cases were subsequently operated upon in this manner by Girard-Marchant (*Gaz. des Hôpitaux*, No. 7, 1898), Jaboulay (*Gaz. des Hôpitaux*, 1895), Donath (*Zeitschrift für klin. Medizin*, Vol. 38), Reclus and Faure (*Gaz. des Hôpitaux*, 1897, No. 71), who observed trachycardia afterwards.

The operation is quite easy; is rather impressive, and of course produces a profound effect upon the patient. Therefore, partly as a result of suggestion, partly as a result of the enthusiasm of the observer, it was at first asserted that the results were excellent. But in 1890, Oppenheim (*Neur. Centralbl*, 1898, p. 1114) stated that the operation had already been abondoned by the French, and with the exception of the case reported by Donath, it does not appear to have been practiced by surgeons of any other nation. Sorgo and Berry (*British Medical Journal*, Jan. 13, 1900), both condemn it. The hypothesis upon which the operation is based, cannot be regarded as satisfactory, although Harkovec (*Wiener med. Woch.*, 1900, No. 2) has endeavored to reconcile it to the thyroid intoxication theory, by suggesting that the thyroid secretion has a selective action upon the sympathetic system, and as the results appear to have been almost uniformly unfavorable, it must be regarded for the present as unjustifiable, and it is not likely, I think, that any modification that may be subsequently introduced, will improve it in the least.

The treatment with drugs has made but few ad-

vances. It has been largely purely symptomatic, or based upon extravagant theories. Thus, the cardiac remedies such as digitalis and strophanthus, have been employed to show the pulse, although the tachycardia is only one manifestation of the disease and there is no reason to suppose that its relief will be of benefit to the patient's condition. The iodides have been employed to reduce the tumor, and the same objection can be urged against them. In fact there is reason to believe that in many cases they do harm. Rellet (*Rev. Med. de la Suisse Romande*, 1881,) has observed acute iodism, and Jaunin (ibid 1899, No. 5) and Breuer (*Wiener klin. Woch.* 1900, No. 28) have observed the symptoms of exophthalmic goitre develop in five cases of simple goitre to which iodine had been given for a long time. The latter has also observed relapses in cured cases to which iodine had been given. Ergotin has been given to contract the dilated blood vessels and Gantier, (*Revue Med. de la Suisse Romande*, 1898, No. 11,) has observed a case that, as a result of its employment, was cured, but developed myxedema, requiring thyroid treatment. The English are particularly fond of preparations of belladoma. Among the other drugs which as Möbius says, are beyond all criticism, because there is neither reason for their use, nor proof of their usefulness, are quinine, antipyrin, pioric acid, aconite, etc.

Vetlesen claims to have observed benefit from the administration of sulphuric acid. In 1895 Trachewsky, in a letter to Kocher, whose student he was as that time, and who subsequently published this letter in his article upon goitre (*Correspondenzblatt f. d. Schweizer Aerzte*, 1895) suggested the use of sodium phosphate in exophthalmic goitre for the extraordinary reason that it is valuable in diabetes, that diabetes is a disease of the medulla oblongata, that exophthalmic goitre is a disease of the medulla oblongata, and therefore should be benefited by the use of the same remedy. Now it must be admitted that it is not at all certain, first, that diabetes is a disease of the medulla oblongata; second, that it is very doubtful if sodium phosphate accomplishes much in diabetes; third, there is no reason to suppose that identical localization of the disease process indicates the employment of similar drugs. Therefore, on only one of the grounds urged by Trachewsky, is there any reason to believe that sodium phosphate would be likely to be of benefit in exophthalmic goitre and that is the bulbar seat of the disease. In favor of this is the experimental work of Troitzki (*Inaugural Dissert St. Petersburg*, 1900, *Abs. in Neurolog. Centralbl.* 1901, p. 272) who produced symptoms resembling those of exophthalmic goitre in rabbits by injuries to the posterior part of the medulla and the observation of Käter (*Hygies* 1899, p. 494, *Abs. in Neurolog. Centralbl.* 1900, p. 351) of exophthalmic goitre associated with diabetes, both rather doubtful supports. Nevertheless, Kocher, for reasons probably purely personal, was pleased to be convinced and to use the remedy, and to recommend it to his friend Sahli, and both employed it from that time quite frequently. The extraordinary thing is that they both found diminution in the pulse rate, improvement in the general condition, marked relief of insomnia, and in some cases apparent cure. The use of phosphate of soda has not been extensive, if we can judge from the very scanty notes in the literature, but it is probable that many men have used it with more or less doubtful success, and said nothing about it. Möbius for example, in his article upon the disease, states that he also has observed beneficial results, and Vellesen recommnds it strongly.

In the past winter I have had the opportunity of testing the drug upon 2 cases of exophthalmic goitre that had been admitted to Dr. Musser's wards at the Presbyterian Hospital, and were therefore under favorable conditions for a careful test.

The first patient, a negress of 25 years, without significant family history, had had an attack of acute articular rheumatism in 1900. Since then she had suffered from edema of the feet when working, dyspnea and palpitation of the heart upon exertion, cough with expectoration, and frequent nausea and vomiting. At the physical examination it was noted that the eyes were prominent, von Graefe's sign was distinct, the thyroid glands were greatly enlarged, the right more than the left, and there was a systolic thrill and a murmur in both. The pulse was small, regular and compressible, and the artery was soft. The heart was greatly enlarged; a diffuse powerful apex beat could be felt in the 5th interspace ½ inch outside the nipple line. The absolute dulness extended from left border of sternum to the left nipple line, and from the 4th rib downward. The relative dulness extended from right nipple line to 1 inch outside left nipple line, and from the 3rd rib downward. Liver dulness commenced at 5th interspace. The heart sounds were loud and clear, and there was a loud systolic murmur heard best at and just above the pulmonic cartilage. There was also a loud systolic note in the crural artery. The patient had a pronounced tremor of the hands; there was a tendency to sweat, she vomited frequently, and complained almost constantly of nausea. She was very weak, nervous and slept poorly. She was also constipated. She was at once placed upon sodium phosphate, 2 drams being given every day at first, and later 1 dram. The result was very favorable. The constipation was relieved, the nausea and vomiting ceased at once, and the area of cardiac dulness had distinctly diminished in the course of 10 days. The pulse rate diminished from 132 to a general average of about 90. Later she developed necrosis of the lower jaw, followed by a severe lymph adenitis, and finally a severe attack of tonsilitis accompanied by high fever, and an increase in the pulse rate to about 130. She passed through these conditions successfully, and 39 days after the treatment had been instituted the physical examination showed the following conditions. Von Graefe's symptom had entirely disappeared, there was slight tremor of the tongue, lips and hands, the thyroid glands were still enlarged, and the murmur and thrill were undiminished. The area of cardiac dulness had diminished slightly; the pulse was usually below 100; all the subjective symptoms had disappeared, and the patient had an excellent appetite, slept well and declared that she felt well. For a few days a small quantity of tincture of digitalis had been given without my knowledge, but this was soon discontinued, and apparently produced no effect.

The second patient, a white woman, 33 years of age, had no significant family or previous history, until two years before, when she had tonsilitis and influenza. Six weeks before admission she had a second attack of tonsilitis. From this time her throat was sore, she had nausea and vomiting, and at times there were vertigo, palpitation, and extreme weakness, as well as cough with expectoration. The heart was not enlarged; the thyroids were not prominent; the eyes showed only slight exophthalma; but there were, however, a distinct von Graefe's sign, tremor of the tongue, and extremities, and a thrill and murmur in the left thyroid, and a loud systolic murmur heard best over the pulmonic cartilage. There was dermatographia and excessive sweating, slight diarrhea and an inability to sleep. The patient was placed upon sodium phosphate, but as this increased the diarrhea to an alarming degree it was found necessary to give aromatic sulphuric acid as a corrective. It was finally found that ½ dram of sodium phosphate with 10 drops of sulphuric acid three times a day did not cause any looseness of

the bowels, in fact there were only one or two normal movements per day. The patient developed no complications. Twenty-three days after the treatment had been commenced it was found that the murmur over the pulmonic cartilage and in the left thyroid had disappeared. Von Graefe's symptom was almost imperceptible. The patient had gained considerably in weight, was sleeping and eating well, and sweating very much less, and all the unpleasant subjective symptoms had disappeared. The reduction in the pulse rate had not been marked. When admitted the pulse averaged about 120 with a maximum of 130. After treatment it averaged 100 with a maximum of 108. In addition to the sodium phosphate and sulphuric acid the patient had received tincture of chloride of iron on account of a moderate diminution in the percentage of hemoglobin.

In both these cases it is very questionable whether the sodium phosphate or the prolonged rest in bed and regular diet was the more efficient agent in producing the improvement. Unfortunately we did not have enough patients in the wards for the purpose of making control experiments, but it was my opinion that these two patients did considerably better than those who have been under my care under similar circumstances, and who have not received the phosphate of soda. As far as the question of cure was concerned, it can be dismissed with the statement that it did not occur. A few of the objective signs disappeared or were greatly diminished, as the murmur in one case, and von Graefe's sign in both. The tachycardia had been only moderately influenced. On the other hand the improvement in sleeping and in the appetite, the disappearance of the disagreeable subjective cardiac manifestations and the cessation of the nausea and vomiting in one case were alll very satisfactory indeed. While it is impossible to draw any conclusions of value from an experience of 2 cases, it is my opinion that in those cases (probably the majority) in which operation, for one reason or another is considered inadvisable, sodium phosphate offers at present the best means at our command for relieving the patient. The dose appears to be from about 1 dram to ½ oz. daily, guarded if necessary, by some mild astringent such as aromatic sulphuric acid.

SHALL PHYSICIANS IN CITIES DISPENSE MEDICINE ?

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The article bearing this title in the **Therapeutic Monthly** for August, 1901, incites me to set forth the arguments on the other side of the question. Having dispensed medicines in my practice for some years past, not to the exclusion of prescription writing, but to a considerable extent, I have become convinced that it is a wise thing to do, from the standpoints of both patient and physician. The patient is benefited by getting drugs more cheaply; by getting preparations which the physician has personally tested, and upon the therapeutic action of which he can depend more certainly than upon the product of the average prescription counter, and by getting the remedies needed in an acute illness promptly instead of waiting until they can be procured from a drug store.

The physician is benefited, possibly financially, just as he is by having a telephone or other time and labor-saving device in his office.

He is further benefited by being better able to supply his poorer patients with medical aid. I presume that most doctors find it necessary at times to supply medicine as well as advice, and I know of patients whose medical attendant has supplied them with medicine at comparatively small cost which, if purchased on prescription, would have cost many times more. It is a great satisfaction to know—whether you receive a fee or not—that your plan of treatment is in operation as soon as you have finished your visit, instead of an indefinite time thereafter.

The dispensing of medicines instead of writing prescriptions saves the doctor's time. On this point I must especially disagree with Dr. Fussell. In some of the epidemics of influenza of recent years, when it has been of the utmost importance to save time in visits, I have satisfied myself that the dispensing of medicines in tablet form and in plainly labelled packages requires less time and involves much less mental strain than the writing of prescriptions for the same formulæ.

The practice of dispensing tablets also removes or greatly lessens a temptation to combine in one prescription—for the sake of economy to your patient—ingredients better given separately.

I do not hold that a physician should dispense all the drugs he uses. Medicines which should be given in liquid form and in other vehicle than plain solution or suspension are in general better referred to the pharmacist.

It is needless to say that the physician who dispenses drugs should buy them from reliable firms and in forms easily absorbable. A little experience will serve to show him that even among reliable manufacturers of pharmaceuticals certain ones excel in the preparation of particular drugs. It is not always possible for a physician to determine where his prescriptions shall be put up. Inferior druggists abound, and many patients will disregard a physician's advice and go to the cheapest one. Moreover, it is even more difficult for a physician to judge of the ability of the fifty odd druggists who are near his patients than to find trustworthy firms to buy his tablets from, and a conscientious man, physician or otherwise, is careful not to prejudice his patients against a pharmacist without good cause.

It has been my lot to attend some families who object to taking "ready made pills," whether dispensed by physician or druggist, or who have a preference for patronizing the pharmacist, and it is a quite common experience with me to find myself inconvenienced by the practical impossibility of prescribing just what I want in any other form than a tablet triturate, or by having to wait for a druggist to obtain with considerable delap something which I have in my medicine case or office.

I acknowledge that some patients in some conditions will not dissolve in their gastric and intestinal juices pills which other patients will take and receive the full therapeutic effect from, also that it is necessary for the dispensing physician to exercise care as to the preparations he selects and the time they are allowed to remain in stock unused. I acknowledge that the doctor who dispenses is more likely to give calomel in doses of 1-10 than of 1-8 or 1-12 of a grain, but I believe my own use of this plan of dispensing tablets has led me to use a

greater rather than a less variety of remedies and formulas.

Dr. Fussell speaks of the injustice of compelling patients to visit the doctor once a week, to renew medicine, when they might as well have a supply of medicine large enough to last a month. To this I would reply that it is easy to give a patient a prescription in that case. On the other hand, patients with chronic conditions are more likely to see their physicians too seldom than the reverse. Moreover, the indefinite renewal of prescriptions by patients, on their own responsibility, and not only for themselves but for their friends who have "just the same thing," furnishes one of the strongest arguments in favor of the physician dispensing his own medicines.

What doctor does not encounter patients taking medicines originally prescribed for some one else and some different pathological condition?

I do not plead for this method to the exclusion of prescription writing, or the extinction of the pharmacist, for whom I have a great respect, but as supplementing the functions of both.

Middle ground is safest here as elsewhere, but whatever evils flow from the dispensing of medicines by physicians they are certainly not such as to justify the condemnation of the practice, which has come to stay, because it is economical, labor-saving, and in cases where quick action is imperative may serve to lessen the duration of suffering or even to save life.

THE THERAPY OF PULMONARY TUBERCULOSIS; A STUDY OF SOME FORMS OF MEDICAL TREATMENT.

By THOMAS LUTHER COLEY, A. B., M. D.,

of Philadelphia,

Chief of Medical Clinic and Assistant Physician to the Methodist Episcopal Hospital, etc.

In a field of such breadth it is well to preface this paper by the statement that it shall be the writer's aim to discuss but a very limited number of methods of treatment of pulmonary tuberculosis. The measures considered will not include the sanatoria or open-air treatment, or the many hygienic aspects of the problem. Further, the consideration of remedial agents will not embrace such generally accepted and valuable agents as strychnin, belladonna, opium, cod liver oil, the older preparations of arsenic, phosphorus, etc.,

It is the aim and object of all forms of treatment of this disease to so increase the resistance of the patient as to bring about the arrest of the tuberculous process, prevent dreaded secondary infection and induce final cure. The physician who is to deal with tuberculosis must recognize, as a preliminary consideration to any form of intelligent treatment, that the success or failure of all therapeutic measures depend upon the condition of the patient's alimentation and the recognition of the defective assimilation and digestion of tuberculous subjects. This observation places before us emphatically the prime necessity of studying the patient's digestive power, and of recognizing the chemical condition of the organism of such patients, which is, to some extent, an index of its resistance. Samuel Bernheim, of Paris, in his address[1] before the recent British Congress on Tuberculosis, lays stress on the transformation of tuberculous soil, which is found to be deficient in acidity into an arthritic soil with an excess of acid. He remarks that tuberculous patients possess a soil deficient in mineral constituents, in chlorides, lacking in phosphates, and above all, deficient in acids. He points out that arthritic patients, on the contrary, have a soil over-mineralized, rich in chlorides and superabundant in acidity, and that these two soils are, in chemical language, in inverse proportion to each other, and from a clinical point of view there exists an antagonism between tuberculosis and the arthritic diathesis. Based upon these facts, Bernheim believes that the system of sanatoria, the absolute rest, and the abundant feeding and high-altitude cure, all have no other end and no other effects than to bring about a transformation of the soil.

J. Hobbs[2] of Bordeaux, emphasizes the fact that the condition of a tuberculous patient is measured by that of his stomach, and he urges, as an important point of treatment, the combating of the anorexia, which is, in many cases, so persistently present.

F. W. Forbes Ross (*The Lancet*, June 22 and August 24, 1901), in particularly logical articles on the subject, states that the success in the treatment of tuberculous conditions must necessarily depend in great part on the problem of diet in this disease, and he goes on to say that estimation of the powers of digestion and assimilation of consumptive patients is one of the most complex and difficult problems of practical medicine. The deranged digestive systems of these patients will not permit them to properly extract the food element of food ordinarily valuable, such as meats, fats, vegetables, etc. The effort on their part consumes an amount of energy quite out of proportion to the food assimilation which is accomplished. This continuous gastric effort, accompanied as it is by diminished digestive power, as the result of functional and irritative morbid conditions, calls into action the pulmonary reflexes and cough results. This last, if in itself, sufficiently aggravated, reacts on the gastric reflex and leads to attacks of vomiting. Thus a complete and vicious cycle is established in total inability to retain food, and as the result of which the general nutrition of the patient rapidly falls and the disease continues its ravages. In these papers Ross makes a plea for the administration of meat albumen, pointing particularly to a contrast in the amount and rapidity of absorption of meat albumen and milk, or casein albumen. Under the unfavorable circumstances of the tuberculous condition the assimilation of milk albumen is much interfered with, and is accomplished at greater cost of energy to the patient.

These brief statements call forcibly to mind the need of an easily digested diet of high food value and such medical measures as will increase the patient's digestive and assimilative powers.

Bernheim, in the address referred to above, suggests the importance of converting the tuberculous

1. Phila. Med. Journ. p. 305. Aug. 24, 1901.
2. Phila. Med. Journ. p. 305. Aug. 24, 1901.

soil deficient in acidity into the arthritic soil with excess of acid. He has been able to accomplish this in a large number of cases, attested by the determination of urinary acidity, by administering phosphoric acid or phosphate of creosote. Under the influence of the latter drug, taken in doses of three grams every two days, he states that he has been enabled to bring about this soil conversion.

J. Hobbs recommends persulphate of soda (the *persodine* of Lemière) as especially valuable in combating the anorexia of such patients and increasing nutrition. The administration of creosote, or its compounds (and in general antiseptics of the aromatic series), in tuberculous conditions has probably no effect whatever upon the bacilli in the lungs. They are especially valuable for their disinfectant action on the stomach and bowels (Cushny[4] and others).

It seems proper to discuss under this head the lately recommended zomotherapy and, the urea treatment.

The Urea Treatment.

Henry Harper has recently advocated[5] treatment of tuberculosis with urea, and dieting such patients on food rich with urea, such as kidney, liver, or brain. He mentions the fact that a few chronic phthisical patients have assured him that food rich in urea acts as a stimulant to them. It has been observed, as mentioned above, that there is a distinct antagonism between gout and its allied conditions and tuberculosis. Those persons who eat a great deal of meat are somewhat immune to tuberculosis. Harper has used pure urea in a large number of cases of tuberculosis, and believes it to be a remedy of superior value. At the same time he applies treatment in the broad sense, employing such therapeutic measures as are of recognized value. Nutritious foods, especially those rich in albumen, are given. He states that these act as antitoxins and render the tissues and fluids of the body proof against bacterial invasion, while others with Samuel Bernheim (q. v.), believe that this remedy as well as zomotherapy brings about a favorable condition of acidity and has no antitoxic effect. Harper advises that a careful and systematic examination of the urea excretion be practiced before and during this treatment. In only two cases in which the urine was examined with Martindale's ureameter has he found any increase in the quantity of urea excreted. He believes that urea given in scruple doses three or four times a day by the mouth or hypodermically, has produced cures in some cases, and improvement in other serious or bad cases, that he was heretofore led to conclude were incurable.

Dr. Arthur H. Buck[6] has also pointed out that the gouty in his experience possess an immunity to tuberculosis to a marked extent, and it is this fact that induced a trial of urea in tuberculosis. He has inquired carefully into the history of fifty families and in only one case has he found bad gout and tubercle present. He makes the interesting observation that the natives of India have for centuries used the urine of the rhinoceros in lung diseases, and it is considered a valuable remedy. Buck, himself, in one of these communications reports a severe case of lupus vulgaris of twelve years standing, which was treated with urea and cured, marked improvement taking place within a few weeks. The pure urea may be given beginning with a dosage of 20 grs. and increased to one drachm three times a day.

Zomotherapy.

In the treatment of phthisis raw meat holds a high place as a food, especially on account of the fact that it is more easily digested than cooked meat. Richet and Hericourt have successfully treated tuberculosis experimentally produced in dogs, with raw meat or the plasma pressed from the raw meat, and they believe that this acts by the antitoxic agents which are contained within it. The fact that the serum has the therapeutic effect as raw meat will be of great importance in the therapeutic point of view in man, as there are patients to whom the idea of eating raw meat is absolutely repugnant. One thousand grams of serum, a quantity comparatively easy to take, corresponds to the enormous quantity of three kilograms of meat.

The question as to the manner in which this treatment acts, is still open to discussion. It seems that in the later stages of the disease, zomotherapy is very dangerous, the muscle plasma is not tolerated, and this is probably due to the fact that the liver functions being insufficient the normal digestive changes do not occur in the intestine. As a result the plasma is absorbed and carried into the general circulation in a raw state, giving rise to symptoms of intoxication similar to those following the intravenous injection of the juice into dogs. An analysis of the experiments of Richet and Héricourt has not yet permitted these investigators to decide whether the muscle plasma is an antitoxin, if it stimulates phagocytosis, or if it is only a special tonic of the nervous system which has the care of organizing the defences of the organism. Feeding with raw meat does not seem to prevent the development of tubercle, but the evolution is considerably slower, and the disease loses its character of a rapid infectious intoxication.

A number of observers agree with Bernheim (*supra*) that the favorable action of this treatment is due to its nitrogenous nature, and that it aids in converting the tuberculous soil into an arthritic soil. However, Richet and Hericourt state that cooked meat is useless and meat of all kinds deprived of its serum is of but mediocre value. It follows that the obstacle to the development of tubercle has no connection with feeding or overfeeding, since cooked meat, from this point of view is equal to raw meat. Dogs which are underfed, but receiving muscle plasma, resist inoculation with tubercle better than dogs deprived of muscle plasma, but receiving a hyper-alimentation. These authorities direct that precaution be used in selecting meat free of *tenia*, and Forbes (*supra*) adds the important warning that careful inspection should be made to be assured that the meat is not itself tuberculous.

It is stated that muscle juice never gives rise to intestinal disturbances, and Richet recommends

4 Pharmacology and Therapeutics. Cushny, Lea Bros. Aug. 24, 1901.
5 The Lancet-March 9. 1901. June 15th.
6 The Practitioner, July 1901, and Phila. Med. Jour. Sept. 14, 1901.

that its administration be followed by a wineglassful of Bordeaux or Muscat. During the continuance of the zomotherapeutic treatment all other treatment must be stopped save cod liver oil, which may be continued. It is recommended that the feeding with muscle juice be kept up for six months at least after all symptoms have subsided, and that it be reinstituted at the first appearance of the many symptoms As to the amount of meat to be used, Héricourt advises that in latent tuberculosis, or tuberculosis in the first stage, from 500 to 1,000 grams of fresh, lean steak be pressed. For phthisis in the second stage from 1,000 to 2,000 grams. For the miliary form, or phthisis in the third stage, from two to three kilograms. These being the quantities to be used in twenty-four hours.

The juice must be taken as soon as expressed. It is very unstable and cannot be transported. It may be made more palatable by the addition of a little salt, or possibly sweetened with syrup or orange juice.

In the August number of **Therapeutic Monthly** a translation of Héricourt's formula for the zomotherapeutic treatment, was given in full, and the reader is referred to this for full dietetic directions and method of preparation.

Cacodyl.

Of the newer drugs which have been accorded an extensive trial, one may mention the cacodylic acid derivatives. A résumé of the literature on their employment indicates a wide range of usefulness for these preparations. We have not been able in the past to secure quite the desired results of arsenic in varying conditions owing to toxic properties when administered in sufficient doses over long periods of time.

Arsenic forms a series of compounds with alcohol radicals, and one of these is arsendimethyl of cacodyl. Cacodylic acid is derived from cacodyl, and its sodium salt has been introduced recently as a therapeutic agent. The cacodylate of sodium is an organic combination of arsenic containing 55% of arsenous acid. It may be given by the mouth or subcutaneously. Professor Armand Gautier first suggested the use of cacodyl in 1899. In a previous communication he reported his discovery of arsenic in normal tissues as a physiological element in the skin, thyroid gland, etc. He concluded from this discovery that arsenic is indicated in certain morbid states, and that the drug should be administered in small amounts over long periods of time. Gautier has found the cacodyl compounds to be admirably adapted for the purpose. They may be administered for years without disturbing the nutrition or inducing congestion in the liver, kidneys, intestines, nervous centres, or skin. He states that if given by the mouth or by rectal injection that crude cacodyl induces after a few days various forms of intolerance, such as feelings of weight and cramp in the epigastrium, intestinal disorders and a fetid breath, accompanied by the odor of garlic. After it is used for some time a slight albuminuria is present in healthy subjects, and still more so in those in whom the kidney does not act normally. Gautier ascribes these untoward effects to impurities which exist in the commercial cacodyl. The odor of the breath is due to cacodylic oxide and this is a poisonous substance which explains digestive trouble and the renal disturbance. Gautier advises that cacodylic acid should be given in its purest form. It should be quite colorless, almost odorless and almost tasteless. As a pharmaceutical test for its purity he states that it should give no precipitate with nitrate of silver or a solution of sal-ammoniac in sulphate of magnesium. The sodium cacodylate is the best form of administering the agent, and is especially valuable on account of its non-poisonous properties, which is explained by the fact that it replaces phosphorus in the lecithins and nucleins. It is, therefore, according to Gautier, living matter impregnated with arsenic which the leukocytes disperse through the circulation and bring into contact with the nervous centres in which it seems to become fixed. It is split up in the body very rapidly and the final products are excreted chiefly by the lungs and kidneys. Most authorities recommend that it be administered subcutaneously. It is claimed that these injections are painless and that in this latent organic form all objections to arsenic, as such, disappear.

Following the administration of, the drug a marked leukocytosis is observed as well as an increase in the number of red cells. The oxygen bearing power of the blood is increased markedly. An important action of arsenic is to fix on the tissues of the nervous system which seem to become less irritable and to diminish tissue waste produced by nervous overstimulation. Hence it is especially recommended not only in neurasthenia and chorea, but in tuberculosis, diabetes mellitus, Graves's disease, cancer of the stomach, as well as in leukocythemia and the grave anemias. In tuberculosis excellent results are obtained with rectal injections of sodium cacodylate in the so-called pre-tuberculous stage, especially when this treatment is combined with fresh air, full diet and rest. In advanced cases of phthisis the action of the drug is by no means specific, but with hygienic measures the results are at least equal to that of any other treatment.

N. Dalché believes that the drug may be administered in pill form without evil effects, except that the breath of the patients acquires a slight odor of garlic. He has not noticed the occurrence of diarrhea nor the symptoms of stomach disturbance following the administration of the drug in pill form. M. Gautier strongly advises, however, that this preparation be used hypodermically, and he recommends the following formula: Pure cacodylate of sodium 6.40 grams, carbolized alcohol 10 drops, and distilled water a hundred grams. This mixture should be boiled for a short time and then made up to a hundred grams with distilled water and placed in a sterilized vessel. Each cubic centimetre of this mixture contains 5 centigrams of cacodylic acid, which is the quantity advised to be first given in one dose every 24 hours. It may, however, be increased to 20 centigrams, or even larger amounts. After eight or ten days, during which time these injections are given, it is advised that the drug be withdrawn for an equal interval. Gautier states that the drug is contraindicated in cases in which there is hemorrhage or hemoptysis in women during the menstrual period, or four or five days preceding them, or in phthisis in the third stage.

Fever, diarrhea, and vomiting do not contra-indicate this treatment, but hepatic insufficiency is an absolute contraindication. In conditions of hypertrophy, cancer, congestion of the liver, and states of jaundice it must be used guardedly.

In a recent interesting contribution Gautier has supplied us with the limitations of this treatment as well as the adjuvants which may be employed. Iodin, he remarks, is completely absent from the bodies of bacteria, and is a valuable defence of the organism against infectious agents. It is also normally present with arsenic in the thyroid gland. He therefore considers iodin and food rich in readily assimilable mineral elements effective adjuncts to the cacodylic medication.

Baradat of Cannes (before the British Congress on Tuberculosis) concludes after extensive trial of cacodyl, that it is especially useful for those predisposed and the incipient cases of tuberculosis. He mentions that there have been a number of reports according to which no good was derived from the drug, but he uses it routinely and regards it of undoubted value.

The Employment of Cinnamic Acid in Tuberculosis.

During the last few years there has been considerable discussion over the rationale of the employment of cinnamic acid and sodium cinnamate in tuberculous conditions, and these agents, like many others recommended, have been warmly praisel by some authorities and found of less value by others. Cinnamic acid resembles benzoic acid in its pharmacological character, and, like benzoic acid, it is the chief constituent of several of the balsams with which it is generally found. For the past 15 years Landerer, of Stuttgart, has employed cinnamic acid in 240 cases of tuberculosis in his sanitarium at Leysing. He believes that the drug produces an intense phagocytosis and induces a sclerotic condition of the tissues around the morbid process, thereby circumscribing it. He also states that the acid exerts a germicidal influence upon the bacillus. He has employed the cinnamate of sodium in the form of a solution or emulsion. The strength of the solution varies from 1 to 5 per cent., and the reaction is made neutral or strongly alkaline. This preparation is introduced into the body by intravenous or intramuscular injections. Landerer claims to have obtained the following results: In 110 cases of pulmonary tuberculosis of, different degrees there were 57 cures, 26 improvements, 5 unsuccessful cases and 22 deaths. In 72 patients suffering from tuberculous arthritis there were 59 cures, eight improvements, two unsuccessful cases and three deaths. In 18 cases of glandular tuberculosis he had 17 cures and one improvement. In 20 cases of peritoneal tuberculosis there were 16 cures, two deaths and two patients in whom no change was appreciable. In five cases of urinary tuberculosis there were three cures and two deaths. In three cases of tuberculosis of the testicle, one was cured and no result was obtained in the other two cases. Landerer devotes a volume of some 300 pages to the results of his work in this field, and feels justified in concluding that this drug administered as he directs is to a great extent specific.

J. Heusser has employed cinnamic acid in the treatment of tuberculosis, and in six cases believes he has accomplished complete cure. In all these cases he practiced injections into the gluteal muscles, beginning with a half minim of a five per cent. emulsion, increasing the amount until a dose of 15 minims was reached. Beyond some burning sensation at the site of the injection, and a passing sense of depression, no unfavorable symptoms were noticed. Fraenkel is the chief opponent to Landerer's views. He has gone over the literature of the treatment of tuberculosis by cinnamic acid, and records a large number of cases in which it has been used. He does not believe that the records show any better results by this method than the older methods. In 150 cases of tuberculosis of the lungs, and in five of lupus, in which Fraenkel has used this treatment, he has found no improvement which could be directly attributed to the drug. His experimental studies as to the action of the drug upon the bacillus itself would seem to prove that the drug possesses no bactericidal action. He injected bacilli into the anterior chamber of a rabbit's eye and subsequently followed this by an injection of cinnamic acid. The effect of the drug upon the bacilli was negative. Fraenkel believes that the drug is useless as an inhalation, that the results of its administration by the stomach are very doubtful, intravenous injection is excessively painful, and subcutaneous injections are equally so unless cocain is used. We may add to this the testimony of Azmanova that the drug is contraindicated in rapid forms of tuberculosis, may cause improvement in the period of infiltration and of softening, but in the acute and subacute forms it is likely to be harmful. The employment of the drug, as reported by numerous clinicians, does not seem to bear our Landerer's claims that it may be regarded as anything like a specific. Cushny does not believe that there is any reason to suppose that the administration of pure cinnamic acid by hypodermic or intravenous injections would induce the changes which Landerer claims; i. e., the irritation, inflammation, and the subsequent cicatrization of the tuberculous nodules. We may conclude in agreeing with Landerer that the hyperleukocytosis which the drug induces may be of value, but that there is no ground for his belief in the further action of cinnamic acid. The fact, however, that 65 per cent. of cases have been improved in a group of 329 cases collected from literature, indicates the drug has a distinct, if restricted place in treatment.*

The Toxin Treatment.

The toxin treatment of tuberculosis offers some promise. Despite the disrepute into which it fell for so many years, there is a tendency on the part of the profession, as is witnessed by the increasing number of records in the literature, to employ certain of the preparations of this class, especially tuberculin and tuberculin R. in selected cases. The persistent efforts of Koch, Goetsch and a few others, who by their careful handling of a large amount

*The formula which Landerer employs is as follows:

Finely powdered cinnamic acid	grs. vii
Oil of sweet almonds	*m* C L
Yolk of an egg	No. i
Saline solution	y per 1000
A sufficient quantity to make	ʒiijss

This preparation is introduced into the body by intravenous or intra-muscular injections.

of clinical material, and by the increased experience in dosage, etc., have secured therapeutic results through its employment, have cause a change of mind on the part of many medical men, and increasing conviction in the usefulness of toxin treatment.

The same cannot be said of the antitoxin treatment. In an infectious disease of this character , its chronic course and great liability to secondary infection, place it in a separate class from such maladies, as diphtheria, and the results of the antitoxin treatment in the two conditions emphasize their very wide diversity as clinical entities.

In a noteworthy paper published in November of 1890, Koch first advocated the use of his lymph as an agent of diagnosis and treatment of selected cases. This lymph, tuberculin, was afterwards stated by him to be an extract of the products of pure cultures of the tubercle bacilli, made with glycerine and water. He held that the remedy would not promptly kill the bacilli, but that it produced a specific action upon the living tuberculous tissue, causing its necrosis and disintegration. He alst stated that it would increase the power of the body tissues, and thereby make the soil unfertile for the development of the organism. It was soon pointed out, however, by Virchow and others, that following injections of tuberculin there occurred a softening and disintegration of the quiescent deposits, and this led to the dissemination of the bacilli through the body. In many instances there followed a marked and untoward reaction. Taken by the mouth tuberculin is inert. As to its action when so ingested Baldwin and Levene (*Jour. Med. Research*, July, 1901) have made an interesting study of the action of proteolytic enzymes on bacterial toxins. Among others tuberculin was considered. They conclude that tuberculin is a specific substance of the nature of a nucleoproteid. When tuberculin is administered by the alimentary tract it may be stated in a general way that pepsin and trypsin weaken its specific action. Prolonged trypsin digestion is able to destroy all the activity of tuberculin, while the same can not be achieved by pepsin. Trypsin digested tuberculin fails to produce a local reaction in the rabbit's eye, and fails to kill tuberculous animals, yet it still possesses a fever-producing power which these investigators attribute to the specific albumoses resulting from digestion, and the well-known susceptibility of tuberculous animals to fever. On the other hand, pepsin digested tuberculin still possesses power to produce local reaction in the rabbit's eye, and retains its toxic power for tuberculous pigs though weakened. It has also been found (Kinghorn) that this digested tuberculin possesses the power to produce lenkoytosis.

In very small doses (1 milligram) of the usual lymph hypodermically injected in healthy subjects, it gives rise to pain in the limbs and a passing sense of fatigue. A similar quantity injected in patients suffering from tuberculosis, even in its incipient stage, produces a marked reaction, both local and general. This makes it a valuable aid to diagnosis.

At the recent Congress on Tuberculosis, in London, Koch reiterated his belief in the therapeutic value of tuberculin, and laid down the rules for its use. They are: 1. That it should be given only to patients that have no fever, and in whom the process has not advanced too far. 2. It should be given only in very small doses, and increased very slowly so that no reaction takes place. 3. If reaction takes place, tuberculin must not be injected until the temperature has become normal. The treatment with tuberculin must not be repeated until, after an interval of three or four months, the capability of reaction is permanently extinct. It will thus be seen that Koch emphasizes the fact that the drug is only to be used in incipient cases, but in these it may be relied upon as a cure.

In this conclusion it is interesting to observe the excellent results recorded by Goetsch (in the *Deut. med. Woch.*, June 10, 1901) concerning his ten years experience with tuberculin. This author has independently treated 224 patients by a method which differs extensively from that which Koch recommends. His teaching involves three fundamental principles. 1. Never use an injection of tuberculin, however small, upon a patient with the slightest pyrexia. If the fever cannot be reduced by rest in bed and by cold packs, the patient must not be treated with tuberculin. 2. Never increase the dose under any circumstances when the preceding dose has produced any reaction whatever. 3. Upon the day of injection and the day following, the patient must remain in bed, otherwise a reaction may ensue.

Goetsch has been enabled by his method to administer large doses of tuberculin without the production of the slightest ill result. The only time when a reaction is sought is to confirm the diagnosis. If a patient fails to react to 0.05 mg. tuberculin which has been administered in minute and increasing doses, that patient is declared free from tuberculosis. The technique of the method is as follows: The first dose is given on the third day, and is based upon such factors as the extent of the disease and the patient's strength. He usually begins with 0.0001 gm. of old tuberculin. Should this injection produce the slightest rise in temperature, the next one is made only one-tenth as strong. If the old tuberculin is not tolerated the new preparation T. R. is substituted. The latter is usually well-borne in 0.001 mg. doses, and appears to pave the way for the use of the older preparation. As soon as the patient can tolerate 0.1 mg. of the T. R., we may go back to the original tuberculin, beginning with 0.0002 to 0.001 gm., and may expect to find it well-borne. The dose may be carefully increased over a long period of time until the patient can tolerate a full grain of the old tuberculin without reaction.

In regard to Goetsch's results, they read like the many favorable reports with selected material, but a remarkable feature about his series of patients is the following: Goetsch, during a period of several years, used absolutely no treatment but tuberculin. Having established criterion, he now introduced diet, massage, cold packs, etc., but was unable to improve upon his earlier results obtained by the specific treatment unaided. Goetsch

had only pursued his tuberculin-therapy for a year when the severe reaction which set in universally made it impossible for him to get patients for several years. When cases began to come in, he found that they came invariably through patients whom he had cured in 1891. The local reaction which in certain cases follows the injection of tuberculin led Koch to make further studies in seeking a product which was devoid of this untoward effect, and, indeed, the opinion of the profession is almost universal (Maragliano and Krause to the contrary), that the later tuberculin T. R. is such a preparation. It is generally held that it does not contain the substances which in the old tuberculin cause pyrexia, paralysis of the vaso-motors and toxic and cardiac symptoms.

T. McCall Anderson, of Glasgow (*Lancet*, June 16, 1900), advocates the use of tuberculin in the treatment of phthissis. He points out, however, especially in reference to the more expensive T. R. preparation, the process of diluting the remedy so as to meet the requirements of varying doses is somewhat troublesome. He believes, that the latter is the safer of the two, because, in appropriate doses, it produces much less reaction, but for that very reason it is not so reliable as the former as a diagnostic test; and a serious objection to the new tuberculin is its cost, particularly when the higher doses are reached, which often precludes its use except in the case of those received into hospital. The initial dose of the old tuberculin is from one-half to one cubic centimetre of 1 in 1000, that of the new 1 cubic centimetre of 1 in 5000; while the final dose of the first is 1 cubic centimetre 1 in 10, and of the second 2 cubic centimetres undiluted. Now the final full dose of the old tuberculin costs less than a penny, while the price of the new is seventeen shillings. Anderson gives patients large doses of cod liver oil (3 ounces a day) which it is claimed may greatly aid the results secured.

Murrell (*British Medical Journal*, July 14, 1900) has published three cases of phthisis treated at the Westminster Hospital with injections of Tuberculin R. His limited experience has been most unfavorable as regards the curative action of the remedy. In not one of the cases was there the slightest signs of improvement. One man, from September 9 to December 1, had 20 injections, the dose being gradually increased from 1-500 to 5 mg. The reaction was always slight and was often absent.

Dr. Heron (*British Med. Journal*, Oct. 14, 1899) referred to the experience which he had recorded before the Medical Society of London in 1891 on the treatment of tuberculosis and lupus by tuberculin. He said there was no important statement which was contained in that paper that he would care to withdraw. He recalled that although all the cases of lupus had improved under treatment, they had all relapsed, while in respect of the thirty-two lung cases the latest information he had was that eight had died, one remaining at work until 1897, when the disease recurred, ten were still in fair health, and the remaining thirteen were lost sight of. In a lecture delivered in 1898, he had referred to nine cases of pulmonary tuberculosis, and one of lupus treated by the new tuberculin. Of the nine, two had died, but both were from the first hopeless cases; one, indeed, was evidently dying, and post-mortem they found an absence of recent tuberculosis which was interesting in view of Virchow's statement that the old tuberculin was apt to be followed by excavation of the diseased part of the lung. In no case in his experience had any untoward results followed the treatment from either the old or the new serum. He had made 2000 injections at the hospital without so much as a superficial abscess. The remaining seven did fairly well in hospital, and left at their own request. As recently as last summer four of these patients were at work in fairly good health. The lupus patient had had no recurrence for eighteen months after leaving hospital. During the past year he had had ten cases of pulmonary tuberculosis under treatment by the new serum; in two the treatment was discontinued because they had high temperatures, which remained high, and in such cases they might take it that there was a mixed infection. Others came up at intervals for the injections, all of whom had improved in health. He recalled that Koch had laid it down that the cases most likely to benefit by the treatment were those in which the temperature had not risen above 99.4 degrees, and in which only a small portion of one lung was affected, and not one of his last cases came under this category.

Krause (*Deut. med. Woch.*, May 18, 1899) reports 41 cases of phthisis treated with tuberculin. Thirty of these were uncomplicated, while 11 showed mixed infection. He considers that 12 of these were practically cured, temporarily at least; but he admits that in none of these cases were tubercle bacilli found. He states that the earliest injections are likely to cause considerable pain; and when this does not disappear after a few repetitions, he discontinues the use of tuberculin. He is almost alone in considering T. R. more dangerous than the old tuberculin.

A. Petruschky (*Berl. klin. Woch.*, Dec. 18 and 25, 1899) discussing the specific treatment of tuberculosis as carried out in Koch's institute, states that the general results have been unsuccessful in cases complicated with secondary infections, and sometimes these cases grew worse. In discussing the possible results of the specific treatment with tuberculin he mentions the following: Lack of result of improper dosage, lack of immunization, a variation from time to time between immunization and overloading with the toxin, and also acute or chronic overintoxication with the toxin. The preparation should be given in very small doses, the increase being regulatedly determining which amounts produce decided local effects but very little general reaction. Petruschky thinks that a permanent cure may usually be expected from tuberculin treatment if periodic courses of treatment are undertaken, two courses usually being sufficient. In 22 cases which he reports, four of which were rather advanced, cure was apparently achieved in all.

J. Bounhiol (*These de Lyon*, 1898, 1899), in a clinical study of tuberculin R, reaches the conclusion that it may cause severe local reaction, disturbance of the temperature, and an unfavorable effect upon

the appetite. He has also found that tuberculin R. has no good effect upon tuberculosis, either in immunizing or curing the patients, these results corresponding with those obtained by other French authors in their experimental work on animals.

N. Raw and J. H. Abram (*Lancet*, July 23, 1898) have used tuberculin R in 13 cases of tuberculosis of the lungs. Four patients recovered entirely, but they were all favorable cases, and the results were therefore not better than those from other methods. Cases of lupus, however, showed marked improvement. In pulmonary cases serious reaction with grave collapse occurred at times. This was probably due to variation in the strength of the T. R.

G. G. S. Taylor *Brit. Med. Jour.*, July 8, 1898) reports four cases of lupus treated with tuberculin R. They first improved notably, then became stationary, and then the disease began once more to advance. All the patients complained of malaise, loss of appetite, pains in the back and limbs, and weakness of the legs. The local reactions were less marked than with the old product. There were no abscesses.

Tuberculocidin and Antiphthisin.

A number of preparations have been introduced since Koch's original tuberculin was placed before the profession. Among these we may mention the **tuberculocidin** of Klebs and the **antiphthisin** of the same investigator. As to tuberculocidin Klebs has abandoned it in favor of his later product, antiphthisin. He claims that Koch's tuberculin contains toxalbumins, precipitated by the sodic codide of bismuth, alkaloids, an albuminoid derived from the bodies of the dead bacilli, and a soz-albumin precipitated by absolute alcohol, after the removal of the toxic ingredients. He states that an aqueous solution of this soz-albumin possesses the germicidal and curative powers of tuberculin without any of its toxic effects. He requests that the remedy be resorted to in cases of pure tuberculosis, excluding for the present cases of mixed infection, septic cases and all such as have amyloid degeneration, or are so far reduced that they must die of the complications or exhaustion present. These requirements restrict the use of the remedy to its most incipient stage.

Trudeau and Baldwin (*Medical Record*, Dec. 21, 1896) have published a careful study of Klebs' antiphthisin. They conclude that it resembles deutero-albumoses in its chemic reactions, and can be precipitated by sodium-bismuth iodid. As a similar substance may be obtained from unplanted bouillon, it cannot be considered altogether specific product of the tubercle bacillus. "The antiphthisin" furnished by Klebs is therefore practically highly diluted tuberculin, and has the same physiologic effects upon animals when given in sufficient doses. It possesses no germicidal power on the tubercle bacillus which can be demonstrated, and has no curative influence upon the course of experimental tuberculosis in the guinea pig. Dennison (*Medical Record*, July 20, 1895) reports some experiments of his with Klebs' antiphthisin, which he describes as an albuminous substance obtained from tuberculin. He reports two cases treated by this method in which the physical signs cleared up and the bacilli disappeared from the sputum. He considers that there are probably slight reactive efforts, and, in opposition to Klebs, holds that the hypodermic dose should be smaller than the rectal dose.

Ambler (*Ther. Gazette*, Feb. 6, 1896) records seven cases of tuberculosis treated with Klebs "antiphthisin" with marked improvement or apparent cure in all. No relapses have occurred in any of the cases.

Von Ruck (*Therap. Gaz.*, May 15, 1896) reports 182 cases of pulmonary tuberculosis treated with tuberculocidin and antiphthisin. He divides the cases into three classes: 1. Those in which there are prospects for obtaining a good result. 2. Those in which the lung affections and complications are more serious and the general health much impaired. 3. Cases in which the prognosis was on the whole quite unfavorable, the lung disease extensive, and septic and other complications often present. Of Class 1, 81 per cent. apparently recovered, 16 per cent. were greatly improved, 3 per cent. were improved; of class 2, 35 per cent. apparently recovered, 34 per cent. were greatly improved, 23 per cent. were improved, 4 per cent. were not improved, and 4 per cent. died; of Class 3, 9 per cent. recovered, 34 per cent. were greatly improved, 14 per cent. were improved, 4 per cent. were not improved, and 38 per cent. died. In the majority of cases reported a year has passed, since their discharge without serious relapse. In only one case was there any reason to believe that the injection had caused increase of temperature, and in all there was considerable amelioration of the subjective symptoms, such as the painfulness of the cough and difficulty in respiration.

Coghill (*Lancet*, Nov., 1895) reports a case of pulmonary tuberculosis affecting both lungs, and in which, against his own judgment, he employed injections of tuberculin. Some improvement was noted, but the patient finally died, apparently of heart-failure due to myocarditis. The autopsy revealed extensive cavities of the lung with a dry lining membrane, surrounded bv thick, fibrous walls.

This is an example of flagrant misuse of a remedy, and it is certainly in part due to such employment that tuberculin fell into such disfavor.

R. B. Klebs (*Berl. klin. Woch.*, Dec. 11, 1899) considers the use of tuberculocidin superior to that of tuberculin in the treatment of phthisis. He thinks specific treatment is essential. The lack of success is often due to one of two causes—mixed infection or gastric disturbance. He attributes much of the gastric disturbance to atrophy of the thyroid, and has found that fresh juice of thyroid gland caused marked improvement in the gastric symptoms. This was not true of thyreodin. Finding that typhoid fever sometimes caused improvement in tuberculosis, he treated mixed infection in tuberculosis with enzyme of the typhoid bacillus, with some favorable results.

Vaquier (*Congrès pour l'Etude de la Tuberculose*, 1898) has had no good results from the use of T. R. in the treatment of five cases of pulmonary tuberculosis in children. Leclerc has seen no unfavorable results, but no good effects. Bonnhill had had only bad effects from its use, since it produced se-

vere local reaction and the general condition became worse. Benoit, on the contrary, believed he had had some valuable results. Bandelier (*Deutsch. med. Woch.*, Dec. 22, 1898) has treated 12 patients with tuberculin R., all these individuals being previously observed to determine that fever was absent. Small doses were used in the beginning, the amount being gradually increased. All but one, a somewhat advanced case, showed improvement. He has also obtained good results in treating tuberculous disease of the bone and joints with T. R.

The Serum Treatment of Maragliano, Paquin and Fisch.

E. L. Trudeau and E. R. Baldwin report a long series of experiments carried out at the Saranac laboratory in the preparation and effects of antitoxins for tuberculosis (*American Journal Med. Sci.*, Dec., 1898, and Jan., 1899). The result of their four years' work was almost negative as far as practical outcome was concerned. No effect upon the bacilli or the course of the disease in guinea pigs was seen from the serum taken from sheep, injected with killed tubercle cultures, non-virulent cultures or tuberculin. Small negative results were seen from the serum of chickens inoculated intra-peritoneally with mammalian tuberculosis; or from the serum of an ass inoculated intra-venously with non-virulent bacilli, and afterwards treated with several extracts of live and dead bacilli in an ass, which was inoculated with virulent bacilli and then treated with tuberculin, seemed to possess an antitoxic power in its serum. The same was true of the serum of rabbits inoculated with non-virulent and virulent bacilli in which recovery occurred. They also studied several preparations made by others, and saw no effect from any of them except that one produced by inoculating a horse with non-virulent cultures. This seemed to have some antitoxic power.

Tourkine (*Vratch*, Oct. 2, 1896) has carried out a number of excellent methods of testing the serum treatment of tuberculosis. He has found that the horse stands well the injection of the living bacilli, and that its serum becomes, in time, to a certain extent resistant to the power of the organism. When the serum had been injected into animals that had previously been inoculated with tuberculosis, he noticed some favorable results indicated by diminution of the temperature and a longer duration of life. However, all of these animals finally died as a result of fatty-degeneration of the viscera, and he concludes that the serum, as far as cats and guinea pigs are concerned, have only a retarding action upon the invariably fatal result, and, therefore, that Maragliano's plan (*vide infra*) of treating human tuberculosis with anti-tubercle serum is at least premature.

Peron (*Compt. rend. de. La Soc. de. Biol.*, May 7, 1897) has concluded after a number of inoculations with an effort of immunizing guinea pigs, that while it is possible to vaccinate guinea pigs in a certain measure against the toxines contained in the tubercle bacilli, that this vaccination does not give immunity against virulent organisms.

Boinet claims to have immunized goats with injections of tuberculin, and has used the resulting serum in eight cases of tuberculosis with marked benefit.

The two serums, which are more familiarly known, are Maragliano's, of Genoa, and that of Paul Paquin, of St. Louis. Maragliano's serum is obtained by inoculating the dog, the ass, and the horse with increasing doses of tuberculin, and use the resulting serum of these animals. Maragliano has always maintained in opposition to the majority of bacteriologists that tuberculosis is a toxicosis, that the tubercle bacillus directly produces a toxin which is responsible for the harm done. He distinctly limits an application of his method to cases of unmixed infection with circumscribed food for diseases of slight consolidation and but little fever. He has achieved considerable success in treating cases of this class. The local signs of the diseases disappeared in 27 per cent. of the cases; the weight increased in 57 per cent. and the bacilli disappeared in 43 per cent., in a series of 445 cases. During the last year (1900 to 1901) he treated 130 cases. Thirty-six were clinically cured, including seventeen marked fever. Cavities were present in three cases. 58 were improved, and the disease remained stationary in 31. In the remaining ve the disease progressed. No advanced cases were cured. It is important to repeat his observation that the antitoxin is unable to cure without, assistance of the organism. When the latter is unable to afford this assistance the antitoxin is comparatively powerless. It is also useless in toxins other than those produced by the bacillus. (*Gazette Degli Ospedali Milan*, Aug. 1901.)

Antiphthisic Serum. T. R. has been prepared by Carl Fish, of St. Louis, who immunizes selected horses by injections of Koch's new tuberculin. The injections are given in gradually increasing quantity during a period of four months, until the enormous dose of 50 cc. of T. R. is reached. The resulting serum, he claims, is really the antitoxin bacteriacidal antiphthisic serum, which will immunize and cure guinea pigs with perfect certainty.

Joseph McFarland (*Phila. Med. Jour.*, March 12, 1898) insists that results with guinea pigs cannot be used as absolute criteria in indicating treatment for human beings, and states that this is often shown by the variation between the experimental and clinical results in this paper. He records his experiments with antituberculin, in which he states it will not cure exciting tuberculosis in guinea pigs, nor will it give, previously to injections, perfect development of tuberculosis. The notes of a number of cases treated with this remedy serve to show that this clinical and antituberculin possess some value in the treatment of tuberculosis, and may ameliorate certain symptoms. Of fifteen cases the result was negative in five, two cases died and three were cured, while the others showed marked improvement.

Fasano (*Arch. Internat di med., e Chir.* xii, *fasc*, 7) has used Maragliano's serum in a number of cases with no ill effect except occasionally cutaneous eruptions, which disappeared rapidly, and a slow enlargement of the glands near the seat of the injection. The favorable results were depression of the temperature, increase in weight, strength and

appetite, diminution of the frequency of the pulse and respiration, and of the quantity of expectoration.

P. P. Paquin (*N. Y. Med. Jour.*, Oct. 24, 1896), referring to his results in the treatment of tuberculosis with the anti-tubercle serum of horses. He reports in this communication 226 cases of varying stages. As to results, there were forty seemingly complete and permanent recoveries. Three apparent recoveries with lesions. 41 improved cases, the patients being able to return to work. 69 were improved to a last degree. 36 died, and 41 disappeared or ceased treatment. The author points out that most of the cases coming under this treatment were in the late stages, and that in the vast majority of such cases nothing can be done to cure the disease.

W. L. Prioleau (*N. Y. Med. Jour.*, June 26, 1897) reports thirteen cases treated with Paquin's serum. Two were reported practically cured, although the bacilli were not found in the sputum of but one, and the diagnosis is open to question. The other suffered from hyperemia, and although he improved considerably, continued the treatment. Six patients died, and the remaining five improved temporarily, but the ultimate result is not known.

Allen (*Jour. A. M. A.*, May 29, 1897) has treated four cases with Paquin's serum. One was cured, two improved, and one was not improved and died.

A. Worcester reports the results of a year's treatment of various cases of tuberculosis (*Boston Med. and Sur. Jour.*, Aug. 2, 1896) with antiphthisin and tuberculin. Of those treated with tuberculin, three improved, three were obliged to change to antiphthisin, two are still under treatment. Of these seven four were in an advanced stage. Of 22 cases treated with antiphthisin, ten were in advance stages, yet four improved markedly. Nine in less adavnced stages showed no special improvement.

It is interesting to note that so eminent an authority as von Ziemmsen believes that Koch's tuberculin R. and Maragliano's serum are of no value in the treatment of tuberculosis (*Münch. med. Woch.*, Jan. 4, 1899).

Treatment of Pulmonary Tuberculosis with Antiseptics.

As to the value of antiseptics in the treatment of pulmonary tuberculosis, it may be said that they are not successful in exerting any marked germicidal action upon the bacilli in whatever manner they are employed. To be effective, as Ruata has pointed out, such remedies must be diluted beforehand in our fourteen pints of blood, and we know of no remedy whatever at the present time which could be administered in such a concentrated form as to destroy the specific bacillus without killing the less resistant cells which may be proof against such effects of the disease as specific treatment. Our chief aim in this internal administration of antiseptics should be to secure beneficial action upon the gastro-intestinal tract, and the value of drugs of this class administered in any other way will undoubtedly be the prevention of secondary infection, and even this object is most difficult of attainment. Methods of intra-tracheal and intravenous injection are of decidedly less value than inhalation.

Inhalation with formalin has for the present an accepted place in treatment. J. L. Green (*Brit. Med. Jour.* Jan. 27, 1900) regards this treatment as an excellent preliminary to the open-air methods. He recommends that one drachm of formalin be used with 4½ drachms of glycerine in 5 ounces of water. Ten drops of the aromatic spirits of ammonia are added when the mucous membrane is irritated.

The writer being impressed with Green's paper, has had a limited experience with this treatment in five cases. Three of the patients were women of extremely nervous temperament, and the inhalations were not well borne. All complained of difficulty in breathing and a feeling of discomfort in the air-passages and conjunctivae. One patient, an able-bodied young mechanic, in whom the physical signs revealed posterial apical consolidation, and whose sputum contained tubercle bacilli, bore the treatment well, but although it was persisted in, in conjunction with other remedial measures, secondary infection occurred, and the case ran a rapidly fatal course. The fifth case was that of a man of 50 years, in whom the tuberculous process was the sequel of pneumonia. No results were apparent from the treatment.

Dr. Crawry Muthu (*Brit. Tuberculosis Congress, vide, Phila. Med. Jour.*, Aug. 31, 1901) presents a paper on the inhalation of formic aldehyde as an aid in the open-air treatment of pulmonary tuberculosis. Its advantages are: 1. It is non-poisonous and non-corrosive. 2. It can be used in the form of vapor, which, being of low specific gravity, is diffusible, and mixes well with the air. 3. It has no action on clothes, textile fabrics, leather goods and general household articles, or on metals, except iron and steel. 4. It is easy and clean in its application. It is of great value in disinfection, and he treats especially on its use in pulmonary tuberculosis. William Murrell, of London, in 1899, recorded twelve successful cases treated by the vapor. The author began treating patients with this drug in 1899, and he has continued his clinical observations ever since. In a report of seven cases already published, two were cured, two were benefited, and in two others the results were not conclusive. In his present paper he records the results of fifteen cases. The formaldehyde was used in the form of gas an formalin (40 per cent. solution). The gas was generated in two ways; by the moist and dry methods. The vapor is administered either in the patient's bedroom or in the inhalation room, which faces south, having plenty of sunshine; for the drier the atmosphere the more the vapor is generated, the greater its penetrating power. The doors or windows are partially or wholly closed, the lamp is lit, the boiler is filled with warm water, the paraform tabloids are put in, the patient sits in a lounge chair or lies in his bed and inhales the gas. The, vapor at first causes irritation of the eyes and nostrils, which passes off after a few minutes. The inhalation is continued for one, two or three hours, when the doors and windows are again opened. The aqueous solution of the vapor, or formalin (40 per cent.), as it is called, is used in two ways. (a) It is used (6 to 10 per cent. solution) in an inhaler, which the patient places over his mouth, using it from four to six hours in the course of the day. (b) It is also

used in the form of fine spray, or in a nebuliser, at a strength of 6 to 10 per cent. solution mixed with glycerine. The patient uses both these methods in the course of the day, either when he is in the open air or in his day shelter with doors and windows wide open.

In an interesting article on treatment (in the *International Medical Annual*, 1901, p. 534) Charles Ruata, of Perugia, states that one of the greatest aims of the practitioner should be to prevent secondary infection. For such a purpose the patient must live in a pure atmosphere, as free as possible from micro-orgnaisms. The splendid effects obtained since ancient times by long sea voyages can only be explained by the effects of pure air, preventing secondary infections. The good effects of sanatoria are produced in the same manner. If a patient could constantly live in the pure air of mountains or of the ocean, certainly he would be in the best conditions for permanent cure. But generally, when patients come back from sanatoria to towns where so many impurities and micro-organisms enter their lungs, they relapse and die. The most efficacious and rational treatment of our time, he believes, is the constant inhalation of antiseptic volatile substances. He has since 1883 obtained a large number of permanent cures by their use. Patients cured in 1884, 1885, 1886, and so on, are now living in perfect health. His patients wear a very light inhaler day and night, at home and out of doors, for a long time, never less than ten or twelve months, sometimes for several years. Every hour or every two hours they put in it 30 to 50 drops of a volatile antiseptic, except at night, during which they put it in when they wake. The compounds of creosote, mixed with volatile oils and chloroform, or formalin, conveniently diluted with alcohol and a little chloroform to make it bearable, give excellent results. The first effect of such a treatment, Ruata claims, is to stop secondary infection when the anatomic changes are not yet too far advanced. The evening fever disappears, and with it night sweats, general depression, etc.; the appetite returns, the patient gains in weight, and resumes the aspect of a healthy person. The cough and expectoration diminish, sometimes very rapidly, sometimes very slowly, till at last they entirely disappear. A little morning cough with some expectoration persists even when all other symptoms have disappeared. The physical signs agree with the external manifestations described.

The necessity of keeping up these inhalations for very long periods of time and the constant wearing of the mask are two decidedly practical reasons why such a method cannot come into general employment.

This author expresses great satisfaction with the results of inhalation with formalin. My own results were not satisfactory and it is the writer's conviction that the treatment with formalin is by no means universally applicable. This is equally true of all methods of treating this disease.

In conclusion, the writer would state:

(1) That there is no specific treatment for pulmonary tuberculosis.

(2) That the most satisfactory results of treatment can only be accomplished when a careful and repeated study has been made of the patient's powers of digestion and assimilation, and when these are kept at the highest possible point of efficiency.

(3) That the action of tuberculin is unquestionably beneficial in a certain percentage of incipient cases.

(4) That of the so-called antitoxins some may possess some antitoxic power, but they are scarcely sufficient for curative purposes in the vast majority even of incipient cases, either of tuberculosis in man or animals.

(5) That the treatment of pulmonary tuberculosis with antiseptics has not yielded especially favorable results. Antiseptics administered internally are of value largely on account of the action on the gastro-intestinal tract. Intra-tracheally, or intravenously or by atomization* they are of no appreciable value. When given by inhalation, they are of more value, but only on account of the possible deterrent effect on secondary infection. To secure the best results from inhalation, Ruata's method, while heroic, seems the most logical but difficult of attainment in the majority of cases.

Bibliography.

(A number of references not incorporated in the text will be found below. The writer wishes to state that the parts of this paper devoted to the discussion of cinnamic acid and the cacodyl derivatives have in briefer form been published by him as editorials in this monthly.)

ZOMOTHERAPY.

CARLES (P.). Puree de viande crue. Gaz. hebd. d. Sc. med. Bordeaux, 1900, XXI, 293-318.

FRANCK (G.). La zomotherapie. Science franc., 1900, X, 2-2.

LABORDE (J. V.). Le trait. medical le choix de la T. combine avec le regime carne. Comptes rendus de l' Acad. de Paris, 1900, LII, 572-575.

LABORDE (J. V.). Contribution a la prophylaxie de la T. par le regime alimentaire. La viande crue: sa digestibilite relative et son assimilation. Demonstration experimentale. Comptes rendus de la Soc. de Biol., 1900, LII, 457-500.

HERICOURT (J.) et RICHET (Ch.). De la preparation et de la composition du plasma musculaire. Comptes rendus de la Soc. de Biol., 1900, LII, 560-563.

Du trait. de l'infection t. par le plasma musculaire ou zomotherapie. Comptes rendus Acad. d. Sc., 1900, CXXX, 605-609.

Rev. Scient., 1900, 4 s., XIII, 306-308, 3 fig. Trait. de la T. experimentale par la viande crue et le jus de viande ou zomotherapie. Comptes rendus de Soc. Biol., 1900, LII, 527-531, 3 fig. Discussion: MALASSEZ.

PAYERNE (J. de). Au sujet du trait. de la T. par la viande crue. Progres Medicale, 1900, 3 s., XII, 2-8.

RICHET (Ch.). Etude historique et bibliographique sur l'emploi de la viande crue dans le trait. de la T. Sem. Medicale, 1900, XX, 239-241.

SICARD (A.). Zomotherapie ou trait. de la T. par la viande crue. Presse Medicale, 1900, I, J. 219-221. Discussion.

UESTI (G.) La cura della tuberculosi con la carne crura o zomotherapia. Rev. crit. di Clin. med.i, Firenze, 1900, I, 510-512.

V. L. Les medications diverses dans le trait. de la T. experimentale. Metatrophisme et therapeutique. Tribune Medicale, 1900, 2 s., XXXIII, 349-350.

La croisade contre l'alcoolisme. Le trait. medical de la T. combine avec le regime carne. Tribune Medicale, 1900, 2 s., XXXIII, 481-485.

WEBER (F. Parkes). The value of the meat in the preventive and curative treatment of pulmonary tuberculosis. Zts. f. Tub., Leipz., 900, 1, 93-95.

BERLIER (F.). La zomotherapie dans la T. Scapel, Liege, 1900, LIII, 115-116.

FUSTER (L.). La viande crue et le traitement de la T. Reflexions generales. N. Montp. med., 1900, 2e s., XII, 402-412.

GUIMARAES (M.). Tratamento da tuberculose (processo Richet-Hericourt). Braxil med., Rio-de-Jan., 1900, XIV, 304-305.

SALMON (P.). Traitement de la T. par la viande crue. C. R. Soc. biol., 1900, LII, 819-821.

THE CACODYL TREATMENT.

BORGHERINI (A.). Gli arsenicali nella cura della tuberculosi. Suppl. al Policlin., Roma, 1900, VI, 1281-1284.

BORMANS (A.). Del cacodilato di soda. Gazz. med. di Torino, 1900, LI, 641-653.

EWART (W.). The cacodylic medication. Polyclin., Lond., 1900, XV, 157-160; 220-226.

JALAGUIER. Paris Thesis in Gaz. Hebd. de Med. et de Chir. July 7, 1901.

GIAJMIS (C.) et BAZZICALUPO (G.). Il trattamento cacodilico nella tuberculosi sperimentale. Gazz. osp., Milano, 1600. XXI, 1252-1254.

MOUISSET. Traitement par le cacodylate de soude. Lyon med., 1900, XCV, 56-58.

ROCAZ. La medication cacodylique chez les enfants. J. de med. Bordeaux, 1900, XXX, 693-695.

COLLET (L.). Quelques recherches sur l'acide cacodylique dans la T. Paris, Jouve et Boyer, 1900, in 8o, no 219, 56 p.

COLLEVILLE. Du cacodylate de soude dans la chlorobacillose. Union med. du Nord-Est, Reims, 1900, XXIV, 26-28.

DALCHE (P.). Observations sur la medication cacodylique B. et M. Soc. med. H., 1900, 3 s., XVII, 191-199. Discussion.

DANLOS. A propos de la communication de MM. Fernand Widal et Prosper Merklen intitulee: Action de la medication cale de Paris, 1900, 2 s., XVII, 253-254. Discussion.

Quelques observations sur la medication cacodylique et les arsenicaux en general a propos de la communication de M. Dalche. Bull: et Memoires de la Soc. des hopitaux medicale de Paris, 1900, 3s., XVII, 230-232.

FRASSI (A.). La cura cacodilica. G. Osp., Milano. 1900. XXI. 346-349.

GAUTIER (A.). Sur la medication cacodylique. J. des Praticiens, 1900, XIV, 165-167.

Bull: et Memoires de la Soc. des hopitaux medicale de Paris, 1900, 3 s., XVII, 240-244. Discussion.

GRASSET (J.). Le cacodylate de soude administre par le tube digestif. Semaine Med., 1900, XX, 90.

N. Montpel. med., 1900, 2 s., X, 412-414.

LETARJET (A.). Traitement par le cacodylate de soude. Lyon med., 1900, XCIV, 370-377.

LETULLE (M.). Les injections de cacodylate de soude. P. M., 1900, I, 209, 3 traces.

MARCHETTI (G.). Alcune notizie sulla cura cacodilica. Rev. crit. di clin. med., Firenze, 1900. I, 275-276.

NYPELSEER (C. van). Le cacodylate de soude en ingestion. Clinique, Brux., 1900, XIV, 385-390.

SANDOZ (Auguste-Albert). Etude sur l'emploi therapeutique de l'acide cacodylique dans la T. P. Paris, Jouve et Boyer, 1900, in-8o, no 617, 86 p.

WIDAL (F.) et MERKLEN (P.). Action de la medication cacodylique, 1900, 3 s., XVII, 232-239. Discussion.

CINNAMIC ACID.

Treatment of Tuberculosis with Cinnamic Acid--Jour. A. M. A., 1900, XXXIV, p. 1010.

Azmanova, (Neviana); Traitement de la T. P. par le cinnamate de soude (Etude Critique et Experimentale) Nancy. 1899-1900, No. 3, p. 111.

LOVTSKY; Vratch, Vol. XX, No. 1.

FRAENKEL: Deutsch Arch. f. klin. Med., Feb. 6, 1900.

J. HEUSER; Therap. Monatschrift. Sept., 1897.

THE CLIMATIC TREATMENT OF TUBERCULAR CONSUMPTION.

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It has occurred to me that a paper on this subject, setting forth the advantages of the various climates in the United States for persons suffering from tubercular disease, might be helpful to the general practitioner who has not the time to look up this important subject at length and who is almost daily asked where to send the patients suffering from this disease.

We all know that any climate different from the one in which the person is taken sick will generally improve him, and that no hard and fast rules can be laid down as to the fulfilment of special indications. Some patients will improve in a warm or hot climate; others in a cold one; some at sea level; others in an altitude of rarefied air, but it is generally considered that all tubercular patients will improve to some extent in a dry locality with abundant sunshine and plenty of outdoor life. As it is a well-known fact that tubercle bacilli are killed by the direct effect of sunlight, with exposure varying from a few minutes to several hours, the time required to destroy them depending upon the thickness of the layer exposed, the previous statement is thus explained.

In selecting a climate for those predisposed to consumption, or who actually have it, the first indication is for a climate that will strengthen and stimulate the general physiological processes of the economy, and in this way retard the progress of the disease. Second, a locality which, if it does not destroy the microbes of the disease, will at least keep them in a dormant state. It must also be remembered that it is not the degree of heat or cold in a climate, but the humidity which is most important. It has been found by experienced observers that consumption is most prevalent in climates from the standpoint of temperature and humidity as follows: (1) Damp, cold climate; (2) damp, hot climate; (3) dry, hot climate; the reverse holds good for improvement in this disease—that is, a consumptive improves most in a dry, cold climate, etc. This is true as to the power to resist the disease but not of the disease when actually present. That is, if the disease is present, it will terminate more rapidly in a hot, damp climate while it arises more frequently in a cold, damp climate. Hirsch has shown that damp heat has not a positive influence on the production of consumption. but has a decidedly unfavorable one upon its progress when once established, while a damp, cold climate is not only a positive factor in the production of consumption, but is highly injurious to those affected with the disease. Again it seems that humidity, apart from other factors, is not influential in itself in producing phthisis.

It is generally conceded that dryness of climate is also a very important factor in treating this disease and must always be considered when seeking a locality. Fluctuation in temperature seems to play a minor role, and changing temperature with dryness of air is less harmful than variableness with dampness. I repeat that while damp heat has not a positive influence on the causation of consumption, it has a decided influence upon its progress when once established.

Density of population and dampness of soil cooperate also in aggravating the disease. This is a well-known fact.

A situation where variability of temperature with moisture prevails might be helpful in summer, but in winter has been found to be injurious. Variability with dryness is thought to diminish the death rate even in winter.

It is now generally conceded that the most important condition of the successful treatment of tubercular disease is plenty of pure air, and after or in connection with this Solly especially advises the following regions in the order named: (1) Elevated regions. (2) Deserts. (3) The sea.

As regard wind, in a broad sense it is said to make a bad climate worse and a good climate better. While cold, moist wind sometimes soothes, it more

*M. Saenger (Muench Med. Woch., May 14 and 21, 1901) has made a series of experiments intended to show the behavior of solutions brought into contact with the respiratory organs by atomization. The author believes that the mere fact that larger or smaller quantities of such liquids are to be found in the lower air passages after inhalation is not proof of their penetration to those areas while still in the nebulous state, for a considerable portion of the inhaled cloud condenses on the posterior pharyngeal wall, whence it may reach the larynx and even deeper parts by dripping down, diffusion through the coating of mucous secretion, and by imperfect attempts at swallowing made during the course of the inhalation, as well as through the force of the inspired air, which is able to carry the condensed vapor into even the deepest regions of the respiratory tree. While it is not to be denied that small amounts of the inhalation may penetrate to the larynx, trachea, and perhaps the coarser bronchi in an unaltered state, such quantities are too minute to have any therapeutic value, and that any of the medicament should still be in atomised form when it reaches the smaller and smallest bronchi seems wholly impossible.

often depresses and aggravates catarrhal affections if they be of a relaxed type. Cold, dry air has a positive effect on these, either stimulating or irritating, and improves relaxed catarrhal conditions, but makes inflammatory states worse. Warm, moist wind lessens irritability, and may be either soothing or depressing. Warm, dry winds act as a tonic, or increase irritability.

While consumption is not common in tropical or frigid zones, it is more prevalent in the former, where also it is more rapidly fatal. The capacity of cold air to hold moisture is greatly less than that of hot air, while in high altitudes humidity is also less. Phthisis is also found more frequently in moderately cool, moist climates than in moderately warm, moist climates. Again, in moderately cool, dry climates and moderately warm, dry climates there seems to be little difference.

In the United States a moderately cool and decidedly dry climate exists only at an elevation of 4,000 feet and above latitude 35° north. Colorado in summer and winter days furnishes such a climate. A climate which is moderately cool, but only relatively dry, exists at an elevation between 1,000 and 4,000 feet. Bethlehem, in the White Mountains, in summer is an example of this, but in winter it is cold and not dry.

As phthisis is a germ disease more or less connected with inflammatory or catarrhal states of the respiratory tract, and companied in many cases with anemia, we can readily understand how persons suffering from tubercular disease will improve in a high altitude more than in a low one, if it be admitted, as is claimed, that an elevated climate will increase the amount of hemoglobin, red corpuscles, and the germicidal power of the blood, making it more difficult for the bacilli to effect a lodgment in the tissues. We would expect, too, to find in patients sent to high altitudes a greater lung capacity, a stronger and larger heart, and an increased ability of the blood to absorb oxygen—all factors which are wanting in this disease. It is the general opinion that for persons who suffer from hemorrhage high altitudes are contraindicated, but according to Solly this is a mistake. As long as no high temperature exists a tendency to hemorrhages is lessened in a high altitude, although when occurring they are often more profuse.

It is well known that while consumption does occur at the highest altitudes, it is very rare. According to Müller, quoted by Solly, the lowest localities have on the average about twice as many consumptives as the highest, indeed, many more if the cases acquired elsewhere be subtracted. But the decrease of phthisis with ascending elevation is neither constant nor proportionate, while the irregularities and fluctuations which are noticeable are owing mostly to position in the social scale, inasmuch as the industrial groups of places show most irregularities, and the agricultural groups touch their lowest death rates at a comparatively small elevation.

Solly believes that the minimum of elevation before good results show themselves is about 1,500 feet, provided other circumstances are favorable. He furnishes the following:

It will be seen that a higher percentage of cases of consumption improves in a high altitude, next in lowland and then in sea regions. On the other hand, cases of an inflammatory character do better in warm, moist climates and next best in warm, dry. The catarrhal cases seem to do better in a warm, dry atmosphere and next in a warm, moist one.

It would appear that the best distribution for these cases is as follows: (1) The stage of infiltration with more or less consolidation of the lung tissues, but not softening, do better in cold, dry and warm, dry climates. (2) Where softening has commenced, but no cavity can be detected, warm, moist and warm, dry climates are most suitable. (3) For the stage in which cavities are present, warm, dry and warm, moist climates are best.

F. I. Knight draws the following conclusions as to the indications and contraindications for altitude treatment:

The age at which altitude is most likely to be of service is under 50; of temperaments the phlegmatic are benefited rather than the nervous, with irritable heart, frequent pulse and inability to resist cold. In the latter, however, are not to be included those who show nervous irritability from disease, as they are generally benefited in high places.

As regards disease, those with—

(1) Early apical affection and little constitutional disturbance are most benefited.

(2) Cases with more advanced disease, showing some consolidation but no excavation or any serious disturbance, do well. When both the apices or much of one lung is involved, and the pulse and temperature are both commonly over 100° F. (37.7 C.), it is best to begin with a low altitude.

(3) Hemorrhagic cases, early cases with hemoptysis and without fever or much disease, are benefited.

(4) Patients with advanced disease, those with cavities or severe hectic symptoms, should not be

sent to high altitudes. A small, quiet cavity is not a contraindication; hectic symptoms are a contraindication.

(5) Patients in an acute condition should not be sent.

(6) Cases of fibroid phthisis are not suitable.

(7) Convalescents from pneumonia or pleurisy are usually well suited for elevated regions.

(8) Advanced cases of tubercular laryngitis, if good local treatment and freedom from dust can be had, may do no worse than elsewhere.

(9) In cases complicated by other diseases there is much care needed. Cardiac dilatation precludes high altitudes; so also does hypertrophy for the most part, though with exceptions. A cardiac murmur, the result of old endocarditis, with no signs of enlargement or deranged circulation, should not deter. Nervous derangements of the heart are usually contraindications. In renal disease and in chronic hepatitis, the local physicians claim that benefit is often obtained. Intestinal ulceration is not barred out, but benefit is doubtful. Heredity to phthisis does not contraindicate high altitudes. Diabetes is a contraindication. Syphilis is no contraindication, though the combination with phthisis always makes the prognosis bad.

The following facts by G. A. Evans will help materially in selecting a climate for these cases:

(1) Climate cool and moderately moist, general elevation, 2,000 feet.—Western slope of the Appalachian chain, Adirondacks, Catskill, Allegheny and Cumberland Mountains.

(2) Climate moderately warm and moderately moist.—Western North Carolina, Asheville, elevation, 2,250 feet; Western South Carolina, Aiken; Georgia, Marietta and Thomasville.

(3) Climate warm and moist.—Florida (equable), Southern California, coast region (equable).

(4) Climate warm and moderately dry, elevation about 2,000 feet.—Southwestern Texas, Southern California, inland.

(5) Climate cool and moderately dry, elevation about 1,000 feet.—Minnesota, Nebraska, Dakota.

(6) Climate cool and dry, elevation from 4,000 to 7,000 feet.—Montana, Wyoming, Colorado, Northern New Mexico and Western Kansas. In this group are to be placed Davos and San Moritz, in Europe.

(7) Climate warm and dry, elevation 3,000 to 5,000 feet.—Southern New Mexico and Southern Arizona.

ANNUAL AVERAGES IN THE U. S. A. (from S. Edwin Solly's "Handbook of Medical Climatology").

	Elevation [1]	Temperature Month mean			Dew point	Relative humidity	Absolute humidity	Rainfall	Cloudy days	Wind mean monthly movement	Normal air-pressure	Number of years of record.				
		January	July	Annual								Temperature	Humidity	Rainfall	Wind	Pressure
	Ft.					p. c.	Grs.	in.		Miles.	Inch.					
Adirondacks, N. Y.	1500	16°	64°	40°	..	..	..	39.0	129[2]	..	..	8	..	15	..	..
Asheville, N. Ca.	2250	38	73	54	44°	69	3.24	45.0	106	..	..	13	4	13	..	..
Aiken, S. Ca.	550	48	..	61	..	..	..	48.0	..	..	..	8	2	25	..	..
Thomasville, N. Ca.	380	52	82	68	56	65	4.86	51.5	97	4225	..	6	6	..	..	..
Jupiter, Fla.	00	65	80	73	67	82	7.21	56.0	73	6564	30.06	5	7	5	4	5
Key West, Fla.	00	71	84	77	69	75	7.48	40.0	71	6952	30.04	19	18	21	10	20
Chattanooga, Tenn.	700	42	79	61	51	71	4.04	57.0	102	4116	29.28	13	10	13	10	14
Denver, Col.	5300	27	73	50	31	50	2.04	14.4	57	4980	24.78	20	6	22	11	20
Colorado Springs, Col.	6000	26	69	47	29	50	1.84	14.4	57	6663	24.08	16	6	16	4	2
Pueblo, N. Mex.	4700	29	76	52	31	49	2.14	12.0	58	5438	25.27	15	5	11	4	4
Santa Fé, N. Mex.	7000	28	70	49	30	48	1.79	14.6	48	4681	23.26	17	10	33	8	20
Salt Lake City, Utah	4300	28	76	52	36	54	2.36	18.9	88	3681	25.64	18	10	24	10	20
El Paso, Tex.	3700	44	83	64	40	48	3.16	9.0	89	3941	26.21	12	10	28	10	14
San Antonio, Tex.	650	51	84	69	58	68	5.26	30.6	92	5901	29.33	13	10	21	7	15
Prescott, Ariz.	5300	34	74	58	35	51	2.31	16.0	51	4898	24.74	13	5	20	10	13
Tucson, Ariz.	2400	50	88	69	44	42	3.25	12.0	57	3735	27.45	14	6	14	4	2
Yuma, Ariz.	140	53	92	72	49	46	3.91	3.0	21	4570	29.76	14	11	16	10	17
Los Angeles, Cal.	300	53	72	62	52	72	4.42	18.0	45	3758	29.64	14	10	21	7	15
Santa Barbara, Cal.	00	52	65	60	51	73	4.20	18.0	73	2872	..	8	8	24	7	..
San Diego, Cal.	00	53	68	61	52	73	4.34	10.0	69	4105	29.92	17	10	42	10	20
Davos Platz	5200	20	55	38	31	77	2.08	38.6	68	..	24.86	21	21	21	..	15

[1] The elevations are given in round numbers for convenience in memorizing. They are believed to be within fifty feet of the actual measurement.

[2] Adirondacks cloudy days from record for Saranac Lake Weather Station for one year (1894).

GONORRHEA AND CHANCROIDS; THEIR TEATMENT.

By N. A. AUERBACH, Ph. G., M. D.,

of New York.

Gonorrhea and chancroids, unlike syphilis, are local diseases requiring a local remedy. Only in the past few years has this fact been demonstrated. Although the pathogenic organism of chancroid has as yet not been isolated, we know that the lesion can only be contracted from a similar one on the same individual or another. On the other hand in gonorrhea we have succeeded in isolating the gonococcus, cultures of which are capable of producing the same urethral discharge in another individual when introduced into the urethra.

Many are the remedies which have been devised for the extermination of these little coffee-bean shaped bacteria. Some are good, others indifferent and many worthless. The chief medication, however, seems to be some salt of silver in combination with a soluble proteid substance. The old-time method was internal dosage of sandal wood oil and copaiba (Mist. La Fayette), as well as astringent injections, which usually caused a stricture, and only stopped the discharge but did not cure. This method was followed by that of antisepsis, both internal and by irrigation (urethral). The Valentine method of irrigation consists of introducing a stream of medicated water from a receptacle at about an elevation of seven feet from the ground through a rubber tube into the urethra, from whence it is allowed to flow into a waste receptacle. This method has been succeeded by one far more practical and efficient, namely the introduction of a silver salt directly into the urethra. This was, however, not as successful as at first supposed. Silver nitrate coagulated the albumin of tissues, and so prevented the salt from penetrating into the deeper layers. Thus only the superficial tissues were affected, leaving the underlying ones to produce another growth of germs. Various preparations of more or less value have been put on the market, those, however, that do not coagulate the albumin, I have found to contain too little silver to be of any service as a remedy, whilst on the other hand the stronger compounds act as badly as the pure nitrate of silver solution. The preparation which has given me the best results thus far has been gelatose-silver, a salt of silver in combination with gelatose. Like the albumins and albumoses, the decomposition products of glutin possess the property of forming compounds with silver, in which the silver is disguised. Such products are obtained by mixture of concentrated neutral solutions of glutose and silver salts, and are isolated from these solutions by evaporating or precipitating with alcohol or acetone. This gelatose-silver is usually injected in one-half of one per cent. solution into the urethra in quantities of from one to two drachms, according to the severity of the case. The dose is gradually increased, in some cases to two per cent. A short outline of my method of treatment, I think, will enable my readers to follow the cases.

1st. Diet. My patient is restricted to only milk, eggs, mineral waters, potatoes, a very little lean meat and above all alcohol is strictly forbidden. Fruit may also be partaken of in moderate quantity, as well as vegetables.

2d. They are cautioned against walking much and directed to be on their feet as little as possible. This precaution is taken to prevent an epididymitis.

3d. I use the Valentine irrigation method, not for its curative effect so much as a prophylactic measure. These irrigations I make at my office daily whenever I can induce the patient to call that often. Injections of the gelatose-silver solutions are made twice daily of varying strengths. They are, when it is possible, preceded by the irrigation. It being, however, a very difficult task to get my patients to call daily at the office, I have been compelled to teach them how to inject without doing damage to themselves, and have them call as often as possible. By the above method, I have been very successful with my gonorrhea cases, the longest lasting three weeks.

In the treatment of chancroids, I find quite a different state of affairs. Of course, there is, in my opinion, no method so positive, and a recovery so rapid as simply excising the chancroid. Whenever the patients allow it, that is what I prefer to do: but men and women alike, fear the surgeon's knife, and it becomes necessary to resort to some other method. I have found that the pure powdered gelatose silver makes the best dressing. It acts as a cautery and an antiseptic combined. Cases thus treated take from two to three weeks for an absolute cure.

CASE No. 1. Martin K. Discharge from urethra, which upon microscopical examination proved to contain gonorrheal germs. Patient complained of severe pain upon urinating, and also during erections. He was put on a mixture containing two drams each of potassium bicarbonate and tr. hyoscyamus dissolved in two ounces of water, taking teaspoonful doses three times daily. Injections of one-half of a one per cent. solution of the gelatose-silver were made twice daily for the first five days, after which time all the discharge had disappeared. Every third day an irrigation with a Valentine irrigator was used. The strength of the injection was increased to one per cent. and continued at that strength until a cure was effected. Patient was discharged as cured in 27 days.

Case No. 2. Fred L. Diagnosis gonorrhea. Profuse creamy discharge from the urethra, pain on micturition. The latter symptom very severe. The usual irrigations were given twice weekly with injections of a ½% solution of gelatose-silver twice daily. The discharge increased in quantity after the first injection, but disappeared entirely after the ninth day. The solution of gelatose-silver was then increased to 1% for fifteen days (once daily) after which period all pain disappeared, and patient was discharged as cured, the whole treatment having taken twenty-four days.

CASE 3.—Miguel G. This man had a very slight discharge from the urethra, but excruciating pain upon micturation. It was impossible to irrigate without first anesthetizing the urethra. After the first injection of gelatose-silver, one-half of a one per cent. solution, the discharge was greatly increased, bu the pain, on the other hand, was diminished. The discharge disappeared after six days of treatment, viz.: irrigations twice weekly, and injections twice daily. The strength of the injections was not changed, owing to the delicacy of the patient's tissues. In twenty days I suspended treatment and dismissed the patient as cured.

CASE 4.—Alexander F. Had an attack of gonorrhea about a year ago, from which he had never recovered. Upon arising in the morning he found the lips of the meatus glued together and felt pain on passing his first urine. Upon examination it was found that there was a slight stricture of the middle third of the urethra. This was first treated and cured before the gonorrhea was taken in hand. Irrigations were instituted daily with injections of gelatose-

silver, one-half of one per cent. twice daily. In this particular case no increase of the discharge was noticed, but an immediate decrease was permanent. This case only lasted seven days excluding the treatment of the stricture

CASE 5.—Henry La. R., a sailor, returned from a cruise of about seven months in southern waters. Contracted gonorrhea from a negress in Cape Town, which first developed after he had begun his homeward voyage. He was unable to receive proper medical attendance until he arrived in New York Upon examination I found a profuse purulent discharge loaded with gonococci, great pain upon micturition and upon erections. The patient called upon me daily for irrigation and injections, the latter of ½% strength of gelatose-silver once daily. It took four injections to make any impression upon the case. At first I thought it would be necessary to resort to some other method on account of pain caused by the injections, but found that after the first three injections the pain diminished. Injections were then made twice daily of the same strength for ten days, after which the conditions had become greatly improved. The strength was then increased to one per cent., and maintained at that for the balance of the time until the cure was affected, the whole case having taken 23 days.

CASE 6.—Frederico G., U. S. Transport Service. Contracted gonorrhea in Porto Rico about five months ago. He was treated by the ship's surgeon, but evidently little interest was taken in the case as the discharge had become worse from day to day. Micturition was attended with the most excruciating pain, in fact, urination was next to impossible, and an erection almost drove the man insane. Daily irrigations were given, as well as an injection of gelatose-silver, ½ of one per cent. solution twice a day. After one week of this treatment a great improvement could be noticed. The discharge, at first increased, was later much diminished, as was also the severe pain on passing water. Erections were not so frequent and also less painful. The injections were then increased to one per cent., and in combination with the irrigations enabled me to discharge the case in three weeks.

CASE 7.—Louis E., an engineer in the—S. S. Line Service, had contracted gonorrhea, and three chancroids situated around corona of the penis. The gonorrhea was treated with the usual Valentine irrigation method, twice weekly, with daily injections of one-half of one per cent. of gelatose-silver solution. The gonorrhea was cured in two and a half weeks. The chancroids were successfully treated with a dry dressing of one part of boric acid and three parts of the gelatose-silver. The sores were thoroughly cleansed and the dressing changed daily. At first considerable pain was experienced, but after a very few minutes this disappeared. The unhealthy tissue soon disappeared, and a nice healthy granulating surface took its place. After three weeks of this treatment the chancroids were entirely healed and up to the present have not recurred.

CASE 8.—Mrs. R. McC. was infected by her husband with gonorrhea. The case was one of considerable severity, the anterfor and posterior vaginal sacks were filled with a creamy foul smelling secretion, the cervix was eroded and infected. The urethra strangely enough was not involved. Local applications of a 5% solution of gelatose-silver were made daily with irrigations of a one to one thousand bichlorid of mercury solution. I found, however, that this latter precaution was unnecessary as the gelatose-silver acted sufficiently strong as an antiseptic and germicide. After nine days the discharge grew markedly less, as did the foul odor. After twenty days no gonococci should be detected in the discharge under the microscope. In four weeks time I was able to discharge the patient as cured.

CASE 9.—Miss Maud S. One large chanchroid about the size of a quarter on the fourchette. When the case presented itself for treatment, nitrate of silver had already been used with the idea of curing the malady. The infected surface was thoroughly cleansed with an alkaline solution of salt and bicarbonate of soda and the pure powdered gelatose-silver dusted over the sore; dressings and washings renewed daily. Under this treatment my patient thrived and in two weeks was discharged as cured. I have seen this case since and have found her in excellent condition.

CASE 10.—Jerry F. Upon examination found a double infection, chanchroid and chancre. This man had to be treated for syphilis as well as for chancroid. Upon the syphilitic treatment we will not dwell here. The chancroid as well as the specific sore were cleansed thoroughly every day and dusted with the powder gelatose-silver and a dry dressing applied. The specific sore was healed about one week before the chancroid. In 19 days after beginning treatment the case was discharged as cured.

CASE 11.—Mrs. F. M., Leucorrhea and erosion of the os uteri. The leucorrhea was treated by nightly douches of hot water. The erosion being healed by four applications, two weekly, of a 30% solution of gelatose-silver to the ounce of glycerin. This is the first case of the kind treated in this way. Should succeeding cases result as successfully as this one, the treatment must necessarily become very popular as well as successful.

CASE 12.—Baby seven days old. A purulent discharge from both eyes, and photophobia were the symptoms. Diagnosis ophthalmia neonatorium. Five drops of a solution of gelatose-silver 1/16 grain to the ounce, was put in both eyes after thoroughly cleansing every morning. Six days saw may little friend in excellent condition, all symptoms having disappeared.

PERNICIOUS ANEMIA IN THE LIGHT OF THE MODERN TOXIN HYPOTHESIS.

By OSSIAN SCHAUMAN,
Helsingfors (Finland.)

As implied by the title it is my intention to discuss in the present paper the much debated question of the pathogenesis of pernicious anemia, but not to refer to *all* manifestations occurring in this affection.

Briefly stated, I shall dwell principally upon the general development of the disease, but shall consider also some special symptoms including especially the morphological changes of the blood.

Before taking up these points, however, I think is is necessary to make a few remarks on the nature of pernicious anemia.

My view in this respect coincides about with that of Immermann (47), Quincke (80), Lichtheim (56), Fr. Müller (66), and other authors who claim that this affection is not an etiological entity but a symptomatic *ensemble* which may be dependent upon different causes. Accordingly I do not include in pernicious anemia the so-called idiopathic or primary, or rather cryptogenetic cases only, in which the affection develops without any demonstrable cause, but also such cases in which an admissible etiological moment for anemia may be found. As is known, among such causes are included:

1. Intestinal parasites.
2. Gastro-intestinal disturbances of another kind.
3. Gestation and puerperium.
4. Repeated hemorrhages.
5. Infectious diseases (syphilis, malaria, typhoid fever) and
6. Intoxications (carbonic acid).

If some investigators (Eichhorst, Grawitz and others) mean to exclude from the group of pernicious anemia those cases of grave anemia in which an objectively demonstrable, primary focus of disease" is found, it may be asked what justifies such a differentiation. According to Grawitz (36) it tends to avoid bringing the most diverse conditions of disease under one classification, conditions which differ in the most pronounced manner from each other."

*Translated from an Original article, published in "von Volkmann's Sammlung klinischer Vortrage."

But who can guarantee that all cases which we now designate as idiopathic, have the same cause? Therefore I believe with Litchtheim (56), that such a common classification is not only permissible, but even necessary, as long as we have no more precise knowledge of the etiology of pernicious anemia than at present.

In this respect we have to consider that, if an etiological factor can be demonstrated in some of those cases, it can not yet be decided, whether this alone is sufficient to cause anemia, or whether it should not rather be regarded solely as an auxiliary cause in the meaning of Immermann, while the real cause is not yet known to us. In fact, it should even be considered in cases in which a primary focus of disease is found, whether the latter has any causal connection with anemia or whether it only represents an unimportant feature (cfr. Quincke (81, p. 579) and Runeberg (85 p. 505). In such a case, for example, it is quite conceivable than in an individual, suffering from cancer of the stomach, pernicious anemia may develop independently of the cancer, and, on the other hand, there is nothing to prevent a person with pernicious anemia from acquiring cancer of the stomach.

A similar general classification is made also in other branches of pathology, for instance, in the inflammatory affections of the serous membranes which may originate from different causes. Some of the latter are known to us, others not, but the cryptogenetic cases as well as those of known origin are included for the present in the common designations pleuritis, pericarditis, peritonitis, etc.

The etiological classification is, it is true, the ideal one, but, for natural reasons, it can be adhered to in only a few cases, and therefore it is to be replaced for the present by a clinico-anatomical one.

In this connection I have to oppose the view that in determining the conception of pernicious anemia prognostic points are to be considered as well. I can not agree with the opinion, held by Eichhorst (23) and Strümpel (98) that only those cases are to be considered genuine pernicious anemias which terminate unfailingly in death; and just as little am I able to endorse Grawitz's (36) view, that the real characteristic of this affection lies in the fact that the anemia does not immediately disappear when the anemic factor has been removed. These opinions are too one-sided, and can scarcely be upheld in practice.

Imagine one of these cases of grave anemia with intermittent course, in which the patient improves once or several times, apparently recovers, and yet finally succumbs. It is beyond doubt that in this case we have to deal with the same affection from the start, but, if the view of Eichhorst and Strümpel were correct, I would have to diagnosticate a simple anemia in the earlier attacks of the disease and pernicious anemia only in the final, lethal attack. Again: suppose we are confronted by a case of bothriocephalus-anemia. According to Grawitz it would then be only the question of a simple secondary anemia "if the pathological composition of the blood, after expulsion of the parasite, at once returns to the normal," of a "genuine, progressive pernicious anemia," however, if, in spite of expulsion, the anemia continues to be present for a long time or leads to death. In both cases the anemia is traced to the same cause (the tape-worm), in both cases the disease presents the same clinical picture throughout, and in spite of this Grauwitz diagnosticates a simple anemia in the former, a pernicious anemia in the latter case. It must be admitted that such a method is not defensible, and I hope that the examples quoted will plainly demonstrate how little the consideration of prognostic factors is justified in classifying diseases.

In order to concisely define my standpoint in this question I would state, that those cases of grave anemia are to be included in pernicious anemia which answer the well-known pathological picture, as described by Biermer and elaborated by Ehrlich, and it is immaterial whether these cases refer to otherwise healthy individuals or to persons suffering from another affection, and immaterial whether the anemia takes a lethal course or not.

I emphasize also here that I do not mean to ascribe a *decisive* diagnostic significance to the result of the blood examination alone.

The general clincal and the hematological findings will probably generally go hand in hand in pernicious anemia, but in very exceptional cases it may occur that Ehrlich's postulates are not complied with, although the other symptoms create the impression that the disease is pernicious anemia. I had the opportunity to observe a typical case of this kind when assistant at the medical clinic of the University of Helsingfors. With the kind permission of my former chief, Professor Dr. J. W. Runeberg, I report this case here as follows:

Patient was a tailor, 22 years of age, who became continually weaker and paler in the course of several months without apparent cause.

On admission, October 31, 1892, to the clinic, a rather delicately built man, he presented the usual picture of pernicious anemia. He was not noticeably emaciated. The skin appeared extremely pale with a tinge of yellow; the visible mucous membranes were also very pale, but not entirely discolored. A rather loud systolic murmur was heard over the heart, but nothing unusual was found in the lungs, stomach and urine. No ova of worms were found in the feces.

Results of the blood examination:—

	Corpuscles.	Hemoglobin	Color Index.
November 1	1,828,000	36	1.19
" 26	1,166,000	21	1.00
January 15	603,000	14	1.32

The red blood corpuscles proved to be almost normal in size and shape, and appeared in short *rouleaux*. The number of white was not increased. In stained dry preparations no nucleated erythrocytes could be found, in spite of repeated examinations.

During the entire time of observation the blood remained almost unchanged. The only difference was that shortly before death the shape of the erythrocytes appeared slightly changed.

Patient was treated with rest in bed, nutritious diet, iron and arsenic, but without avail. The debility increased continually; severe vomiting set in; the cardiac dulness extended, while the sound grew louder, and finally, on January 20, 1893, death occurred with symptoms of general exhaustion.

The autopsy proved the following: In the skin of the thigh, in the retina of the left eye, also under the epicardium were punctiform hemorrhages. At the apices of both lungs were some single yellow-white, miliary formations,

surrounded by coarse fibrous tissue. The heart was considerably dilated, and, mottled with yellowish spots and stripes, especially in the papillary muscles. Endocardium, valves and orifices were intact. Spleen not enlarged. Liver small. Gall-bladder filled with thick, dark-colored bile. The medulla in the sternum was pale, in the diaphysis of the right humerus yellowish (unfortunately the femur could not be examined). There was moreover pronounced paleness of all the organs.

There can not be a question of a simple secondary anemia in this case. It is true, in both pulmonary apices signs of a very slight tuberculosis were found, but it is impossible that the latter should have been the cause of the affection in question. But it is remarkable that, although it fully answered the pathological picture of Biermer, the anemia did not present any of the morphological changes of the blood, as required by Ehrlich; no megalocytes, no nucleated erythrocytes and, especially, no megaloblasts. It is also to be observed that the marrow of the sternum was pale, while in pernicious anemia it is generally bright red and frequently presents even a pulp like appearance.

Other investigators have also observed cases, similar to the above, although rarely. Ehrlich (20) himself has seen two, and from the blood examination during life he diagnosticated aplasia of the bone marrow. Quit recently a similar case has been reported by Engel (26) also.

I do not consider is permissible to classify the cases in question as simple chronic anemia, as did Lazarus (54a, p. 158), because of the blood composition, unless it has been demonstrated that the pathogenic agent is of an entirely different character from that in megaloblastic anemias.

In my opinion it seems most natural to assume, that we have here to deal with a genuine pernicious anemia, and that the different blood finding is caused by individual peculiarities of the blood making apparatus. I shall later on again refer to this point.

2.

While formerly one had but a vague idea or none at all of the original cause of pernicious anemia, recently we have gradually become convinced that it is caused by a peculiar substance of a toxic character.

As is well known, Silberman (93) deserves the credit for having inaugurated the experimental foundation for this view. He showed in 1886 that hemoglobinemia can be produced in animals by small, repeated administration of various cythemolytics, and, in connection with it, a grave anemia. As the latter presented a remarkable similarity to human pernicious anemia, he suggested that, according to its character, the last named affection is also a hemoglobinemia, and therefore caused by increased cythemolysis. He laid especial stress upon the ferment effect of the liberated hemoglobin, and held it also responsible for the fever, the hemorrhages into organs and for still other symptoms occurring in pernicious anemia.

The results of Silbermann's investigations have been confirmed in their principal features by Stadelmann (95), Bignami and Dionisi (8), Battistini and Rovere (4), von Voss (101), Tallqvist (99), and others, inasmuch as they also succeeded in producing grave anemia in animals by injecting blood toxins. However, Silbermann's view as to the conspicuous significance of hemoglobinemia in the causation of anemia did not meet with general approval, and may now be considered disproven, since it has been demonstrated that severe toxic anemias may be produced in animals without the presence of hemoglobinemia (Stadelmann (95, p. 235), Tallqvist (99, p. 100)).

W. Hunter (44) assumed in 1888, independent of Silbermann's experiments, that pernicious anemia is caused by an increased disintegration of blood corpuscles, which in its turn is brought about by resorption of toxic material from the intestine. A confirmation of this view he found partly in animal experiments—he produced severe anemic conditions by administration of small doses of toluylendiamin—partly in certain clinical observations, including especially the abundant deposition of iron in the liver, an extraordinarily frequent event in pernicious anemia. This excess of iron, so-called siderosis, which had been previously observed by Quincke (80 and 81) is, according to the unanimous reports of all investigators, to be explained by the fact that the residue of the erythrocytes, which were destroyed in increased quantities, is deposited in the liver as well as in other organs.

Of late years the toxin hypothesis has gained continually, and I do not believe I err greatly in contending that it is at present more or less positively supported by most authors who have made a study of pernicious anemia.

3.

The question now is: Are there really positive reasons for regarding *all* cases of grave anemia, which, in accordance with the above postulates, may be classified as pernicious anemias, as within the meaning of the toxin hypothesis just mentioned?

As to the so-called primary or cryptogenetic cases this question may probably be answered in the affirmative. The excess of iron in several organs, which is almost regularly found in connection with them, indicates the activity of a toxin in the body.

But how is it with the secondary forms? With them the decision is not so easy partly because our knowledge of the conduct of the siderosis is much more deficient. To settle the question a more thorough investigation is necessary of the different forms of anemia.

We commence with parasitic anemias, among which ankylostomiasis and bothriocephalus anemias should be considered first of all.

Ankylostomiasis was originally taken to be a post-hemorrhagic anemia, but this opinion had to give way to another view, after Lussana (60) and later Ervant Arslan (28) demonstrated by their researches that the urine of patients suffering from ankylostomiasis contained toxins which upon inoculation into animals caused severe anemia in the latter. Based on this observation it was at once concluded by nearly everyone that the changes in the blood in this affection were to be traced to a toxin secreted by the parasite. This deduction, was however, premature, because the experiments of Lussana and Ervant Arslan as to

the toxicity of the urine of ankylostomiasis have recently been disproved by Ferrante Aporti (32). Although he conscientiously followed Lussana's directions in experimenting, he was not able to confirm the results obtained by this observer. The urine proved to be uniformly toxic and anemiafacient, whether is was taken *before, during* or *after* the worm-cure.

Moreover, other objections can be raised against a supposed toxic effect.

First is to be remarked that the amount of iron in the organs does not correspond to that in genuine toxic anemias. Stockman (96) made very exhaustive comparative investigations regarding this point, and obtained some very interesting results, which I take the liberty of reporting. He found the amount of iron in 100 grams dry substance of the liver to be:

In four cases without any special anemia	0.070—0.090
In two cases of pernicious anemia	0.140 and 0.230
In two cases of bothriocephalus-anemia	0.166 and 0.262
In four cases ankylostomiasis	0.020, 0.021 0.030 and 0.050

Whence we perceive that in pernicious and bothriocephalus anemia there existed an actual excess of iron in the liver, while in ankylostomiasis the deposits of iron were considerably less than the norm, or presented a similar condition throughout, as in hemorrhagic anemia.

In the second place it should be remembered that the ratio of the amount of hemoglobin to the number of blood corpuscles is not the same as in experimental toxin anemia and in ordinary pernicious anemia. While in the latter affections the color-index is given as 1 or a trifle above 1, this value was found by Zappert (104) to be much less, or fluctuating between 0.62—0.35 in ankylostomiasis. Accordingly the color index is considerably less in the last named affection, or, in other words, it is the same as in anemias after repeated hemorrhages.

It is evidently a mistake to conclude with Zappert (104) and Leichtenstern (55) that the low color-index speaks in favor of a toxic effect.

Finally special stress should be laid upon the fact that the significance of hemorrhages as cause of ankylostomiasis has been demonstrated beyond any doubt by Leichtenstern's exhaustive experiments on the vampiric activity of this parasite.

It is therefore questionable whether under these circumstances a toxic effect should be considered at all in the development of ankylostomiasis. It could only be the question of a combined effect of the repeated loss of blood and of a toxin, as Leichtenstern (55) now assumes. The occurrence of an increased disintegration of albumin as demonstrated by Bohland (11) could be especially mentioned in favor of a toxic effect, but, according to the explanations of Leichtenstern, the production of toxin is not necessarily to be brought into direct connection with the parasites; instead it may be a consequence of the sucking of the blood, which has lasted for months or even years—a conception which is quite in accord with my view, to be explained later, regarding the significance of hemorrhage in the etiology of pernicious anemia.

However this may be, it is evident from the above that ankylostomiasis can not be considered a true representative of a toxic anemia in the ordinary meaning. It seems, also, that this form of anemia in a clinical respect does not answer all the requirements which at present are understood to pertain to pernicious anemia, and this appears to be particularly the case with the blood finding.

Entirely different conditions prevail in bothriocephalus anemia, which may rightly be considered the type of true toxic anemia.

The possibility of loss of blood through parasites is precluded here, and other losses of nutritive fluids can not play any important rôle in an etiological relation. In this form of anemia there is further found a pronounced siderosis of the liver; a ratio exists between the quantity of pigment and that of blood corpuscles, which is to be considered characteristic of toxin anemias, and there are present all other criteria, postulated for pernicious anemia by Bierner and Ehrlich.

All these circumstances render very plausible the presumption of a toxic cause of the anemia, and the correctness of this hypothesis, which was contended by Reyher (82), should be considered demonstrated, since Tallqvist and I (91) have shown that a distinct anemia can be produced in dogs by administration of freshly expelled bothriocephali.

So much for the so-called parasitic anemias. Concerning pernicious anemias caused by other gastro-intestinal disturbances the supposition, that they originate as consequence of some toxic effect, has much in its favor.

I am thinking particularly of those cases in which good results were accomplished by therapeutic measures directed expressly to the intestinal tract, and I name of them especially: The case described by Sandoz (87), in which recovery followed repeated lavage of the stomach, also the case reported by Jürgensen (48), in which the anemia was cured after a great number of "bacteria termo" had been expelled with the stools after administration of "extractum filicis." But it is understood that these and similar cases are of no *decisive* significance, inasmuch as it can not be assumed that "*post hoc*" and "*propter hoc*" are identical in this instance.

Carcinomatous anemias should also be mentioned here. If a pernicious anemia can actually arise on the soil of a gastric carcinoma, a toxic influence can not well be denied.

Those cases should also belong to this category which are traced to atrophic processes in the mucous membrane of the intestinal tract. But as it is more than doubtful, in my opinion, whether these changes can be considered the cause of anemia, I may here forego the discussion of these forms.

(To be Continued.)

Massage in Sprains and Joint Affections.—In the *Bulletin Medicale*, (August 17, 1901, No. 65) Dragron describes massage in the treatment both of sprained ankle and hydrarthrosis. Massage should be performed at once, both in the joint and in the muscles. Then passive motion can be carried out, followed by active exercise of the part. The same treatment applies to hydrarthrosis. Dagron employs it with great success. The muscles and the joint must be watched and massage when necessary, for a month or so after stopping the treatment, to prevent any stiffness or pain.

Abstracts of Therapeutic Literature.

CONSTITUTIONAL DISEASES.

Treatment of Diabetes Mellitus.—A. C. Cotton (*Jour. Amer. Med. Assoc.*, Sept 7, 1901), states that at present there is no routine treatment, and of the many drugs and remedial agents that have found advocates, such as opium, bromids, antipyrin, sodium salicylate, alkalies, etc., few, if any, have met with the approbation of more than a very limited number of clinicians. With, perhaps, the exception of opium, which seems to retard the progress of the disease, and alkalies to counteract the "acidosis" and impending coma, the benefits of drug therapy are admittedly restricted to rare, exceptional cases. Against the high rate of mortality from this disorder in childhood, the limited utility of opium affords but a modicum of encouragement as to help from medicaments. The prolongation of a life, with the establishment of the opium habit at its threshold, is not sufficient compensation. At the present time the regulation of diet seems to be the most important therapeutic measure and by far the greater number of important improvements have been attributed to diet. That the severe form is the one most frequently seen in early childhood is acknowledged, and the rapid course of the disease, rarely influenced by therapy, is the experience of all. The death certificate follows hard upon the diagnosis. If from this gloomy outlook concerning the prognosis in early childhood there be one ray of light, it seems to the writer, that for the present at least, it must be sought along the lines of prophylaxis. It is now believed that diabetes is not a hereditary disease, at least develops along the lines of a somewhat positive diathesis. To the extent that the function of the family physician is supervisory over his patients, may he hope to avert such disorders by controlling their development through attention to hygiene, in order that the young whose immediate or remote ancestry show diabetes, gout, tuberculosis, necrosis, or even syphilis, should be sedulously guarded. Dietary errors, such as ingestion of food beyond the child's capacity for absorption and assimilation, preponderance of saccharin substances, as sweetmeats, confections and pastries, must be carefully avoided. That the elimination in these little patients is of the utmost importance receives additional significance when we consider that some observations emphasize autoinfection and reinfection as an etiologic factor. It is of interest to mention in this connection that injection of the feces as well as the urine of diabetic patients in lower animals will reproduce glycosuria. A thorough care of the digestive tract, including the teeth, is all important. So, too, the care of the skin and respiratory organs, that elimination by the former and oxygenation through the latter may attain the highest possible perfection. Adenoids should receive attention, as well as other evidences of lymphadenitis and struma. Especially should we protect these children from mental strain, shocks, frights, trauma and exposure to inclement weather, since cases are reported in which the development of glycosuria was preceded by such disturbance. In a child thus carefully observed, diabetes may be anticipated by the appearance of pre-glycosuric signs, such as incontinence of urine, muscular debility, irritability, with progressive emaciation in spite of voracious appetite, even though a single test of the urine fails to reveal sugar. The importance of an early diagnosis is evident, for it is admitted that success bears an inverse ratio to the previous continuance of the disease. The utmost care of the diet and hygiene is even more important in children than in adults, since a higher ratio of metabolism is essential to growth in addition to repair. But the child will not bear radical dietary changes well. Hence, though so important, the reduction of carbohydrates should be gradual. The same may be said of the augmentation of fats, when indicated. Finally, too much stress cannot be laid upon the importance of protecting the child from a sudden lowering of the temperature.

The Treatment of Obesity.—E. Stadelmann (*Berliner Klinische Wochenschrift*, June 24, 1901, No. 25) discusses the methods of Banting, Ebstein, Oertel and Schwenninger for the treatment of obesity. He warns the profession regarding the dangers of the first method, which consists in the use of large quantities of meat and a slight amount of carbohydrates, on account of its injurious influence in cases of gout and renal disorders. Ebstein permits the ingestion of albuminous and fatty foods, but lessens the amount of carbodydrates, which the author believes is adaptable for milder cases of obesity. The method of Oertel, which has previously been advocated by Felix Hirschfeld, consists in cutting down the consumption of fluids. The latter observer's views are based upon his experiences among the beer drinkers of Munich. The method of Schwenninger is practically the same as that of Oertel.

ELECTRO-THERAPY.

Static Electricity in Medicine.—A. di Lutzenberger (*Giorn. intern. delle scienze med.*, 1901, Fasc. 3 u. 4) after considering the historical development of static electricity claims that according to his experiences it is one of the most valuable procedures in medicine, provided it is applied methodically and scientifically; it exerts a stimulating influence upon the trophic nerves, thus also influencing metabolism, secretion and circulation.

TREATMENT OF SUNSTROKE.

Treatment of "Sunstroke."—Alfred C. Prentice (*Medical Review of Reviews*, August 25, 1901, p. 710) states that during the month of July several hundred cases of isolation have been reported in New York. Those cases treated in the hospitals received, in general, frequent and prolonged cardiac stimulation in form of strychnine, nitroglycerine, digitalis, camphor, atropine, ether and whisky hypodermatically; some of the bad cases receiving the full physiological dose of all these drugs, governed by effect on pulse. In connection with the drug treatment, full tub-baths varying in temperature from 50° to 70° F. of from 3 to 25 minutes duration, and repeated p. r. n., as indicated by the patient's temperature; double-current rectal irrigations; icebags to head; and ice-rubs, completed the general method of treatment, in the majority of cases. Infusion with normal saline solution, 1500 to 2000 c. c. at temperature of 94° to 100° was practiced in some of the hospitals upon some of the very bad cases. Three cases observed by the writer in Roosevelt Hospital furnish interesting results as compared with the other methods of treatment. Case I.—J. H. Baker, age 42, admitted unconscious, T. 109.6°, P. 150, scarcely perceptible, R. 30. Patient was given ice tub-bath for twenty-three minutes at 50° F., together with strychnine, camphor, ether, digitalis and whisky, at intervals of 2 to 15 minutes. Bath was stopped when temperature had fallen to 99.6°, twenty-four minutes later T. 96.4°, P. 100, R. 30; but T. immediately began to rise and three hours later was 107.2°. Rectal irrigation with three gallons saline at 80°F. reduced T. to 104.6°, but it rapidly rose again. Two hours later a vein was opened, ʒ viii blood drawn, and an infusion was given with 2000 c.c. normal saline, T. 100°F., which reduced patient's T. to 97°, R. 24, P. somewhat improved. From this point T. rose very gradually, reaching maximum of 101°F., P. 84, R. 24. After thirteen hours, general condition good, mind rational. On third day patient passed by rectum ʒ xvi of blood, but hemorrhage was checked promptly by opium tr. m v. q. 3 h. for three doses. Temperature came to normal on sixth day, and did not go above 101° at any time after the infusion was given. Case II.—T. L., age 38, badly alcoholic, admitted with T. 100°, P. 144, R. 36. During two days seven tub-baths at 60°F. were given with fall of temperature half hour after each bath to normal or below, but rapidly running up to 105° F. within from three to five hours. Pulse weak, rapid, irregular throughout, stimulated, from time to time, with digitalis, morphin, nitroglycerin, strychnine, camphor, ether, whisky. Before seventh bath an infusion was given, without previous blood-letting, 2000 c.c. at 93°F. saline, slightly improved pulse, but temperature continued to rise. General condition bad, simulating delirium tremens. Case III.—J. H., age 50, admitted unconscious, T. 105.2°, P. feeble. Received *only* saline infusion, without bloodletting, 1500 c.c. saline at 94°F. Pulse improved markedly, patient became conscious, and T. was reduced to 102.4° at once. Continued to improve and was discharged cured in three days. Theoretically, the toxins in the blood which are poisoning the brain-centers, are withdrawn by copious blood-letting and circulating fluid supplied by normal saline solution. This is rational treatment in coal-gas poisoning and may prove to be equally so in heat prostration or "sunstroke."

DISEASES OF THE EAR.

The Treatment of Suppurative Otitis by Currents of Oxygen under Pressure.—Among the number of remedies which have been used in the treatment of suppurative otitis (says *La Semaine Medicale*, August 21, 1901) the bioxide of hydrogen seems to possess an undoubted value, but it has been shown that the oxygen of this preparation is really its active principle. A number of authors, Stockes and Rosati, among others, have conceived the idea of employing the gas directly to the middle ear. These clinicians have applied the gas over the external auditory process, while Dr. Ferrera had administered it by the Eustachian route, after cocainization and the disinfection of the throat and nasal passages. After many experiences, this physician has determined the pressure at which oxygen could be administered without discomfort to the patient, and he has found that this should not exceed one half atmosphere. He employed this process with success in acute forms, as well as in chronic, but without osseous lesions.

GENITO-URINARY DISEASES.

Hydriatic Treatment of Gonorrhea.—(*Modern Medicine*, August, 1901, p. 187). Many of the sequelae of gonorrhea have been directly traced to the use of harsh remedies in treatment, such as a very strong solution of nitrate of silver, and other irritating drugs. The irritating effects resulting from highly diluted solutions of mercuric bichlorid, and other metallic salts, are often surprisingly great. It is a fact worth knowing, that all these irritations may be avoided. Most satisfactory results may be obtained by the irrigation of the urethra with a simple one per cent. solution of common salt. The solution should be boiled for twenty minutes, then cooled to the proper temperature. Injection should be begun at a temperature of about 100°, the temperature being gradually increased to 120°, or as hot as can be borne, and care should be taken not to increase it too rapidly. If possible, raise it to about 120°, or even 130°. The high temperature is, of course, not intended to be sufficient to destroy the micro-organisms, but to cleanse the tissues, and at the same time to increase the vital resistance, so that the tissues are able to destroy the micrococci.

DERMATOLOGY.

The Action of Light Upon the Skin.—Niels R. Finsen discusses this subject in an interesting report *Meddelelser fra Finsen's Med. Lys. Institut.*) which leads to the following conclusions: (1) He has confirmed the results of Wiedmark's researches on the action of light upon the skin, and further proved that the visible chemical rays also have the power to produce specific photo-chemical inflammation of the skin. (2) He has shown that in the electric light the strongest bactericidal power resides in the ultra-violet rays, and as a practical conclusion, it follows that quartz lenses ought exclusively to be used in electric light concentrating apparatus; and this alteration (from glass lenses) has immensely advanced the treatment with concentrated light. (3) He has pointed out that the dilatation of the cutaneous vessels produced by the chemical (ultra-violet) rays is of considerable duration, and it has even been possible to show this about half a year after the light's action. (4) Comparison of the different factors acting on the skin has shown that the normal reddish color which the skin acquires, when uncovered, seems, if not exclusively, certainly for the most part, to be reduced by the chemical rays; its occurrence seems to be retarded by heat and promoted by cold. Observations 3 and 4 indicate a great advance in the study of the physiological action of light upon the skin. Whereas formerly it was only a question of acute skin reddening, the pigmentation being considered the principal or sole chronic result of the effect of light, there is now the phenomenon of chronic skin redness also to be attributed to the influence of light. The reason that this effect has been overlooked is no doubt this—that the pigmentation being the more conspicuous phenomenon has exclusively attracted attention, and also that this pigmentation has partly concealed the red color of the skin. On the other hand, in cases where there has been little pigment, and therefore conspicious skin redness, or where the pigment has disappeared and the skin redness has thus become more evident, the cause was generally attributed to factors other than the chemical rays of light. We have, therefore, taken a step forward; but the step is not a complete one, as we do not thoroughly know the importance or exact signification of an abundant blood supply to the skin. We are entitled to presume that the skin is better nourished and more able to perform its functions; but what these functions are we do not fully know as yet. Only when we come to have a definite knowledge of these will the importance of the action of light upon the skin be clear, and we will then, without doubt arrive at the conviction that we have in the chemical rays of light a resource—perhaps the most powerful known to us—whereby (in the forms of light baths) we can enhance the functions of the skin. At the Light Institute we have, for some time past, but principally with other objects in view, tried the therapeutic use of such photo-chemical light baths (sun-baths, electric-light baths). Our experience has, however, been very limited up to the present time, and we are not yet out of the experimental stage.

LEPROSY.

The Treatment of Leprosy by Subcutaneous Injection of Chaulmoogra Oil.—Hallopeau (*Bull. de l'acad. de Med*, 1901, No. 9) arrives at the following conclusions: (1) Cases of leprosy that are subjected to intramuscular injections of chaulmoogra oil or, administration by the mouth, may be so far improved that one can correctly speak of a cure. (2) More frequently, however, the manifestations continue but assume a benign character. (3) In certain cases in spite of the treatment there are intense local and general recrudescenses. (4) The influence of the oil is not sufficient to limit the progress of the disease and cannot be compared to mercury or potassium iodide in syphilis or quinine in malaria. (5) The hypodermatic injections of this oil are to be preferred on those patients that can tolerate them; this method of treatment, however, frequently gives rise to violent pain and may cause transitory rises in temperature and pulmonary emboli. (6) It would be well to undertake experiment with the drug in the state of enemata, an emulsion being made with milk.

The Treatment of Leprosy with Ichthyol.—H. de Brun (*Bull. de l'acad. de Med.*, 1901, No. 16). Excellent results have been obtained by the author in a number of cases of leprosy from the internal administration of ichthyol. The remedy, however, is only adapted to the nodular form, the nervous and anesthetic varieties not being influenced by the drug. It was even found that if the drug was used in the nervous and anesthetic forms the symptoms became exaggerated. The author is of the opinion that ichthyol can be administered in much larger doses than heretofore without disagreeable symptoms ensuing, and that quantities from 8 to 10 g. per day can be administered with impunity. The dose ought to be increased gradually although one can begin with 5 g. a day. He attributes no value to the external application of the drug in these conditions.

OPHTHALMOLOGY.

Optic Neuritis Following the Administration of Thyroid Extract.—Coppez (*La Presse Med. belg.*, No. 3, 1901) observed five cases of optic neuritis following the administration of thyroid extract, the optic neuritis being in the form of a partial retrobulbar neuritis. Prognosis showed itself to be good. Therapy consisted of local blood-letting in the stage of hyperemia, followed by the administration of nux vomica and the application of the constant current.

The Use of Sulphate of Copper in Affections of the Cornea and of the Lid Other Than Trachoma.—J. H. Claiborne (*Medical Record*, July 27, 1901) says that sulphate of copper in the form of the solid stick is indicated: (1) In all acute attacks of inflammation of the cornea in which there is thickening with a succulent velvety appearance of the upper lid. (2) In all recurrent attacks of superficial keratitis in which the same condition of the upper lid prevails. (3) In infiltrations of the cornea which are the result of preceding inflammations, associated with the same condition of the upper lid. (4) In maculæ of the cornea in children and adults which have occurred a reasonable time after an inflammation, whether the upper lid presents the characteristic appearance or not. (5) In chronic conjunctivitis attended by thickening of the lid associated with blephari-

tis. (6) In chronic dacryocystitis (particularly in those cases in which the canaliculus has been slit) attended by chronic conjunctivitis.

MALIGNANT DISEASES.

The Treatment of Inoperable Carcinoma with Osmic Acid.—Herard (*Bulletin Medical*, 1901, No. 37) reports at the Paris Therapeutic Society on May 8, 1901, that his method of treatment with osmic acid had decreased the pain as well as the fetid odor in carcinoma. He injects 8 to 30 c.cm. of Flemming's solution into the central portion of the growth and in addition applies compresses saturated with the same solution. The solution is composed of the same ingredients as are employed in the pathological laboratory, namely: Four parts of a 2 per cent. aqueous solution of osmic acid, 15 parts of a 1 per cent. aqueous solution of chromic acid and one part of glacial acetic acid. He claims that this method of treatment surpasses the application of methyline blue.

Calcium Carbide in Inoperable Cancer.—Dr. I. C. Chase in an article upon this subject in the *Journal of the Amer. Med. Ass'n.*, June 22 1901, concludes as follows: (1) The mass of the literature on this subject is misleading. (2) The originators of the treatment were ignorant of the real action of calcium carbide, and had insufficient clinical experience to pass judgment on its value. (3) Acetylene has no effect on protoplasm sufficient to support a theory of any specific annihilative action on carcinomatous cells. (4) Acetylene has no escharotic effect. (5) Acetylene has no bactericidal action upon pathogenic bacteria or the bacteria of putrefaction. (6) The principal action of calcium carbide results from liberated quicklime. (7) Lime is not a rational caustic to select, if one is desired, because of its superficial action, the character of the necrosis, and tendency to promote hemorrhage. The metallic salts are more styptic, and their action may be better graduated by proper selection. (8) The amount of heat evolved may be sufficient to slightly cauterize the tissues. In most cases it has slight therapeutic effect save counteracting the tendency to hemorrhage and promoting contraction. (9) The heat of the actual cautery promises better results because of the firmer cicatrices, resisting carcinomatous invasion, and more complete contraction of the wound. (10) Calcium carbide is open to the same dangers as other caustics when improperly or too zealously applied: Those of producing its corrosive action in the wrong place, fistula, perforation and fatal peritonitis or occlusion of the ureters. (11) The treatment does not reduce odor or hemorrhage, nor give more comfort to the patient than other rational lines of treatment. (12) The claims of advocates have not been realized in experience. There is no evidence in theory or practice warranting the conclusion that calcium carbide could ever cure a case of really inoperable cancer of the uterus. (13) The facts regarding the subjects should be more widely disseminated to expurgate medical literature and to avoid false expectations and fatal delays in operable cases. Calcium carbide is a hard, grayish, slag-like mass, formed by the union of quicklime and coke at a high temperature of the electric furnace. It emits a garlic-like odor when in contact with the moisture of the atmosphere, and crumbles to a grayish-white powder. In contact with water it is violently disintegrated, liberating acetylene gas according to the formula: $Ca\,C + H\,O—Ca\,O+C\,H$. The procedure usually advised in applying the carbide is: (1) The removal of all necrotic tissue by the curette; (2) hot irrigation, cleansing and drying the wound; (3) the insertion of one or two pieces of calcium carbide the size of the terminal phalanx of the thumb; (4) fixing the carbide in place by iodoform gauze packing; (5) the removal of the gauze between the second and fifth day, cleansing, drying and repeating the process. The various claims made by the advocates of this treatment since its introduction in 1898 by Dr. J. H. Etheridge and Dr. W. B. Coley are the following: (1) Acetylene gas has a specific escharotic action on the carcinomatous tissue. (2) Acetylene has an antiseptic action, inhibiting the bacteria of putrefaction and thus reducing odor. (3) It transforms the necrotic area into a clean, contracting, granulating wound. (4) Hemorrhage ceases or is greatly diminished. (5) Wider experience shows its positive value. (6) It gives the patient more comfort and postpones death. (7) It is without danger. (8) It is sometimes capable of producing a complete cure.

PEDIATRICS.

The Treatment of the Nasopharynx in Scarlatina—A. Seibert (*Arch. of Pediatrics*, August, 1901), advises energetic local treatment in cases of scarlatinous sore throat, and believes that local measures cannot be abandoned until an effective serum therapy for scarlatina and its complications is secured. Before the nasopharynx has become obstructed, he uses irrigation of one to five per cent. warm solution of ichthyol; in more advanced stages of scarlatinous nasopharyngitis he uses local applications of fifty per cent. resorcin solution in alcohol. He believes this latter treatment applicable and carried out very easily in the case of young infants.

Alcoholism in Childhood.—Kassowitz (*Deutsche Medicinal Zeitung*) presents the following conclusions: (1) Severe functional disturbances (delirium tremens, alcoholic mania, epilepsy) and organic changes (anasarca, enlargement of the liver) have been observed by the author and others after the continued use of alcohol. (2) These diseases occurred not only after the use of brandy and exseccive doses of other alcoholic drinks, but also after the use of ordinary amounts of wine and beer, and even after such small doses of cognac as are usually considered not only harmless but even curative. (3) From these results we must conclude that the nervous system in childhood is extremly sensitive to the poisonous effects of alcohol. (4) The administration of alcoholic drinks to children is permitted in the best regulated families in the belief that small doses cure weakness and diseased conditions. It is easily demonstrated, however, that this idea is absolutely wrong. (5) Physiological experiments have disproved the former views that alcohol is a food and prevents body waste; the excretion of urea is increased rather than diminished during the administration of alcohol. (6) From this it may be concluded that the protracted use of alcohol prevents the growth and development of the child. (7) Even as an appetizer alcohol is useless, since experiments have shown that it disturbs rather than aids digestion. (8) As an antipyretic alcohol is useless, because even after the administration of very large doses the temperature falls but slightly. (9) Researches have shown that the much-lauded stimulating effect of alcohol either does not occur or is very passing, but that a slow degree of depression of the muscles and nerves takes place. The use of alcohol, therefore, for the prevention and treatment of cardiac weakness in childhood has no scientific foundation. (10) The internal administration of alcohol as an antiseptic—that is, as a bactericidal agent, in acute infectious diseases—is not rational. Experiments have shown that during its administration the resistance against infection is diminished rather than increased, and that alcohol is too quickly oxidized to have any bactericidal power. (11) In school children even after a moderate use, the weakening effect upon the intellect was evident. (12) From the foregoing ill effects of even moderate amounts of alcohol, the administration of alcoholic drinks to sick children is under all circumstances to be discountenanced.

Artificial Respiration in the Treatment of Infantile Bronchitis.—A German Military Surgeon, Hermann (*La Semaine Medicale*, August 21, 1901) has for some years recommended the treatment of rebellious bronchitis which arrests the usual treatment, by artificial respiration, following Schulz's method. This method is applicable in broncho-pneumonia in infants, not only at a time when asphyxiation seems imminent, but also at the time of the beginning of the disease. In connection with internal medication and the practice of hydrotherapy, he orders at frequent intervals during the day, that artificial respiration be practiced for about half an hour at a time. One hand is applied over the false ribs, one exercising light pressure at the base of the thorax at the moment of respiration. This treatment is well-borne and the respirations become deeper and expectoration more profuse, at the same time the respiratory movements diminish in number. This method has also been successfully carried out by Freuthardt.

PHARMACOLOGY.

Value of Experiments with Salol in the Clinical Study of the Functions of the Pancreas.—P. Noubécourt and Prosper Merklen (*Gazette Hebdomadaire de Medecine et de Chirurgie*, June 13, 1901) from their investigation of this subject conclude that the property of splitting up salol is not limited to the pancreas alone, but the bile and all the mucosa of the digestive tract possess the same action. It is, however, probable that this breaking up of salol does not take place in the stomach on account of the acidity of the gastric juice; it occurs, indeed, only in the presence of an alkaline or neutral medium, and a very feeble acidity suffices to prevent the action. Clinically, then, the use of salol has no value in the exploration of the functions of the pancreas.

A Diaphoretic Cure for Osteomalacia.—Rudolf Schmidt (*Berl. Klin. Woch.*, July 3, 1901) says osteomalacia has been treated by a number of drugs, by diet, oophorin, baths, and oophorectomy, according to the various theories. Lack of exposure to cold, and warm, moist applications have caused the greatest improvement, by influencing the vasomotor and secretory functions of the skin. Some hyperemia occurs in the intra-osteal and periosteal circulation. This may be due either to a weakness of the walls of the arteries and veins, or to obstruction to the course of these vessels through the compact Haversian canals. Therapeutics have been of no avail against this. Hypothetically, a superficial hyperemia should deplete that found in the deeper parts. Therefore Schmidt used **hot air baths.** He reports in detail two cases of puerperal osteomalacia, thus treated for six months, with complete recovery following. Insomnia, which is common in osteomalacia, was also cured by this treatment. Other means of producing diaphoresis should be followed by the same results, hot baths, hot drinks, pilocarpin, etc.

On the Action of the Digestive Ferments on Abrin and its Fate in the Gastro-Intestinal Tract.—S. K. Dzerszhgovski and N. O. Ziber-Schumova (*Archiv. Biologitcheskich Nauk*, Vol. VIII, No. 5) established by a series of experiments on animals the following facts: (1) Abrin is capable of passing through porcelain filters. (2) Hydrochloric acid, in concentration normally present in the gastric juice, as well as the digestive ferments of the gastro-intestinal tract, does weaken to a certain extent the toxicity of abrin. (3) When abrin is administered by the mouth it is partly destroyed by the organism in proportion to the quantity administered. (4) Under conditions present in the digestive tract, abrin not only becomes weaker but also changes its essential properties, such as the production of typical post-mortem appearances and causation of conjunctivitis.

Enemata and Suppositories of Huckelberry Extract in the Treatment of Proctitis.—(*Wiener klinische Wochenschrift*, 1900). With this remedy the author claims to have obtained excellent results in proctitis and colitis with this treatment. He employs it in the form of an enema and also in the form of suppository. In the latter form in addition to the huckleberry extract, he also combines a small quantity of potassium carbonate, ordering two suppositories daily. The enemata are more effectual than the suppositories.

Seibert's Ichthyol Treatment of Scarlet Fever.—H. Kraus (*Prager Med. Woch.*, 1900, No. 52) failed to obtain any improvement with ichthyol treatment recommended by Seibert. In three cases treated by this method there occurred a marked dermatitis and an exceptionally pronounced desquamation. He states that the influence upon the course of the disease itself was of no consequence.

The Mixture of Trional and Paraldehyd as an Hypnotic.—Repiteau (*These. de Paris* 1900 quoted in *Berliner Klinische Wochenschrift*, August 12, 1901, p.847) has found that by mixing trional with paraldehyd the hypnotic power of the solution is increased four or five times as much as that of trional alone. He recommends as an excellent hypnotic, trional one part, paraldehyd one part, and oil of sweet almonds fifteen parts. The fluidity of the mixture is similar to that seen in the well known toothache drops composed of camphor and chloral hydrate. This combination of trional and paraldehyd may also be employed in the form of enemata and suppositories.

Case of Coma Following the Application of Carbolic Acid Compresses to the Skin.—Douglas-Crawford (*Lancet*, April 6, 1901) report such a case occurring in a four year old girl upon whom osteotomy had been performed and whose legs from the heel upward were covered with compresses previously saturated in a 2½% carbolic acid solution. The patient had been previously bathed and the skin cleansed with turpentine. The child became comatose with a pulse of 180 and carboluria. The skin of the patient who finally recovered, was found to be completely intact.

Phosphoric Acid in Dyspepsia and Neurasthenia.—(*Gaz. de Gynecologie*, May, 1901). An exaggerated elimination of phosphoric acid is the result of worry and increased taxation of the nervous system, and in time this will bring about the neurasthenic state. This is first manifested by the acid condition of the urine. The nerve cells may loose their phosphorus from some physical debilitating cause, usually in the digestive tract. It is essential that this phosphorus be supplied. Joulie recommends 12 drops of medicinal phosphoric acid twice a day. Bardet prescribes a lemonade made of 28 gm. of medicinal phosphoric acid, 29 gm. of extract of orange and 250 gm. of simple syrup, adding enough water to make one liter. The dose is 10 to 15 teaspoonfuls in water during meals. Phosphoric acid has the advantage over other acids in the treatment of dyspepsia, in that it furnishes the organism with a substance which is needed. It has a laxative action, however, and this contra-indicates it in diarrheal conditions.

A Fatal Case of Poisoning by Paraldehyde.—L. Drage (*Lancet*, September 22, 1900) reports a fatal case of paraldehyde poisoning in a woman 46 years of age, suffering with bronchitis and emphysema. The patient has taken almost 5 g. within 33 hours, followed by one dose of 60 g. The symptom complex consisted of unconsciousness, profuse diaphoresis, intermittent pulse, superficial respiration and deep cyanosis. Death ensued 3 hours after the last dose.

Trional Intoxication.—Rosenfeld (*Berliner Klinische Wochenschrift*, 1901, No. 20) adds another case of trional intoxication to the eight already reported. The patient, a poorly nourished woman, who on account of paranoia with hallucinations had been given trional at various intervals in doses of 1 g. for a time tolerated the drug quite well. Suddenly her gait became unsteady, there occurred marked dizziness, and death soon ensued. On the day of her death, hematoporphyrin was present in the urine. The autopsy revealed nothing abnormal except a marked decrease in size of all organs, especially the heart.

Bromoform Poisoning.—Burton-Fanning (*Brit. Med. Journal*, May 18, 1901) reports a case of bromoform poisoning, occurring in a year old girl who had been taking the drug for pertussis. The onset was characterized by dizziness, followed by complete unconsciousness, marked pallor of the skin and contraction of the pupils. The breath smelt strongly of bromoform. After repeated emesis, and strychnine hypodermically, the patient gradually regained consciousness. The authors call attention to the many recent cases of bromoform poisoning, as a result of the ad-

The Disinfecting Power of Camphor.—Löwenstein (*Prager Med. Wochenschrift*, 1901, No. 7) found that at a temperature of 37° the action of camphor succeeded in somewhat inhibiting the growth of the staphylococcus aureus, but had no effect on the bacillus pyocyaneus. At 45° the bactericidal action of camphor on the typhoid bacillus was plainly recognized.

Methylene Blue.—J. Castaigne and X. Bender (quoted in *Med. Record*, Sept. 14, 1901), give a resumé of experimental work on methylene blue, and among the results obtained by various authorities, they describe those of Pédenko who has observed seventy-nine cases. Of these, seventeen were acute nephritis, two of which were verified anatomically; ten were cases of chronic parenchymatous nephritis; sixteen were cases of interstitial nephritis (nine autopsies). This author concludes that elimination of methy-

lene blue depends to a great extent on the anatomical condition of the kidney; the more deeply and extensively the excretory power of the kidney is affected, the greater are the alterations in elimination. It is important always to use the same preparation of the blue, and to study its course systematically. In nephritis, if the maximum degree of coloration of the urine by the blue is near type I, which is taken as a standard, and if the duration of elimination does not last longer than from fifty-five to sixty five hours, then no renal alterations exist, or at least, the lesion is very slight.—(*Gazette des Hôpitaux*, August 3, 1901.)

DISEASES OF THE LUNGS.

The Injection of Gelatin for Hemoptysis.—Julian Demange reports the case-histories of three bronchiectatic patients with profuse hemorrhages, treated with injections of a sterilized serum containing 5% of gelatin. Every other day an injection of 50 c.c. was given. With care, guarding against infection, and not injecting too much gelatin at a time, this method caused marked amelioration in the general condition of the subjects and stopped further hemoptysis. The patients were kept at absolute rest, upon hypotensive diet. Higher doses of gelatin were injected without causing any bad signs, in a few cases. (*Revue Medicale de l'Est*, July 15, 1901, No. 14).

Home Treatment of Phthisis.—Guy Hinsdale (*Pennsylvania Medical Journal*) considers home treatment to be usually a makeshift, adopted from necessity and rarely from choice. Persons who leave their homes for hospitals, sanatoria, and even open resorts, will do more for themselves than they would at home, and conform more readily to the régime prescribed. City air is impure, full of dust, smoke, carbonic-acid gas, and pathogenic organisms; moreover, at home, in the winter, the transitions regarding relative humidity vary too greatly between indoors and outdoors. Under the open-air treatment, the patient has few, if any, of these transitions. In Colorado and New Mexico he has dry air all the time. The place where a person has contracted phthisis is usually not a good place for him to remain for treatment.

The Treatment of Tuberculosis.—Klebs (*Münch. med. Woch.*, No. 49, 1900), impressed with the uncertainty of the treatment of tuberculosis in sanatoria, recommends the continuance of attempts to arrive at a satisfactory casual treatment. The method which he now uses is the injection of the zymases of tubercle bacillus cultures, "tuberculocidin" and "antiphthisin," which he has found capable of arresting an experimentally-produced tuberculosis in guineapigs and rats. Clinically he has used this method in tuberculosis of the lungs and other organs. In phthisis he is able to record improvement in 78 per cent. of the cases, and marked improvement in 60 per cent. The most satisfactory results have been obtained in the younger patients, and especially in cases of scrofulous adenitis. Administration by the mouth had the advantage of being better tolerated, and followed by less febrile reaction than injection. External application is efficacious when the disease affects the skin, and intra-articular or peri-articular injection where the joints are concerned.

The Treatment of Asthmatic Attacks.—Kraus (*Therap. d. Gegenw.*, 1900, IX) has employed a mixture of antipyrin and caffein for combating and shortening asthmatic attacks. He succeeded in many cases in relieving the patient of dyspnea in a short time. The intranasal application of cocaine is claimed by the author to be an indispensible procedure. The principal indications for the employment of the antipyrine and caffein are idiopathic bronchial asthma and in those cases where the attacks begin with intranasal vasomotor phenomena. In cases of exquisite bronchial asthma the drugs are still more useful. The patient should be carefully watched during the administration of the drugs especially when the therapy is extended over a length of time. In addition to employing the drugs during the individual attacks, the regular treatment between the attacks should of course also be instituted.

The Treatment of Tuberculosis.—This article, read by S. Bernheim at the Congress on Tuberculosis in London, appears in *L'Independance Medicale* for August 7, 1901. After expressing his ideas at length, Bernheim concludes that the treatment of tuberculosis must strengthen the resistance of the individual; that the tubercular subject must be made as naturally resistant as is the gouty, lithemic individual, for while the former is hypoacid, the latter is hyperacid; that the tubercular subject should therefore be given acids, minerals, and phosphates. For this purpose Bernheim advises air, rest, and feeding; as drugs only creosote and phosphorus. He uses creosote phosphate, a preparation called *phosphote*, 3 to 5 c.c. by injection once or twice a week. He believes that this will accomplish excellent results among the dispensary classes.

The Control of Cough in Tuberculosis.—Lalesque (*Journal de Medecine de Bordeaux*, March 10, 1901, quoted in the *Southern California Practitioner*, August, 1901, p. 306), believes that it is extremely important that the patient should to a certain extent control the cough by voluntary means rather than by the continued administration of cough sedatives, and he suggests making it a rule that there should be no cough without expectoration, because often the cough is a reflex phenomenon due to irritation, or, in other words, is a form of brusque cough which, when frequently repeated, exhausts the patient without any result. In some instances, of course, it is exceedingly difficult to voluntarily control the cough, and when lungs are filled with secretion and broken-down material it is manifestly necessary that a certain amount of cough should occur in each twenty-four hours in order that septic absorption from retained sputum shall not take place. Lalesque points out that it is rather curious how patients can be trained in regard to their cough and expectoration; that in some instances by a process of training cough can almost entirely be put aside, and the patient become so skillful bringing up sputum that not infrequently expectoration and a clearing of the lungs is accomplished without prolonged exhaustive cough. As we have already pointed out, there are some cases in which it is impossible for the patient to control the cough, but there are others in which the cough habit seems to be to a certain extent established, and for such a certain amount of training is certainly advisable.

Aspirin in Pleurisy with Effusion.—N. A. Savelieff (*Medicinskoie Obosrenie*, April, 1901, quoted in the *Medical Review of Reviews*, August 25, 1901, p. 711) employs aspirin in cases in which salicylic acid or salicylate of soda is indicated, with exceptionally good results. The untoward effects of the latter are as a rule absent when aspirin is used. In one case of pleurisy this drug rendered valuable services by reducing the temperature, producing profuse diaphoresis and diuresis with consequent diminution of the effusion. The only objection to the drug is the high price. The author reports a case of idiosyncrasy towards the drug. A woman suffering from rheumatism took 5 grams of aspirin in fractional doses. On the second day ringing in the ears, weakness and delirium developed.

The Treatment of Tuberculosis with Raw Meat and Intratracheal Injections of Orthoform.—Garnault (*Med. Moderne*, 1901, No. 8) is an earnest supporter of zomotherapy as advocated by Richet and Hèricourt. The latter authors found that of dogs infected with tuberculosis all died with the exception of those that had been fed on the muscle plasma. The author reports a case of advanced tuberculosis coming under his own observation which improved wonderfully under the administration of 600 g. of raw meat per day together with intratracheal injections of orthoform and olive oil.

DISEASES OF THE NERVOUS SYSTEM.

The Dietetic Treatment of Epilepsy.—R. Balint (*Berliner Klinische Woch.*, June 10, 1901, No. 23) recommends for the treatment of epilepsy the removal of sodium chloride from the diet and replacing it by a bromine salt. Even the bread should be specially prepared by baking it with a bromine instead of table salt. The author reports favorable results in the 28 cases of epilepsy he treated and states that there were no symptoms of bromism. His conclusions are as follows: (1) In every case of epilepsy a diet of sodium chloride is applicable and should be tried. (2) The treatment is most successfully carried out in an institution.

(3) Until a thorough knowledge of the character of the disease is ascertained, a rigid diet deprived of sodium chloride should be instituted. (4) In addition to this form of diet, small doses of bromides should be administered. (5) The introduction of bromides into the nutriment and especially into the bread as a substitute for the sodium-chloride is to be recommended, as it is an agreeable way of administering the drug. The favorable result of this treatment is to be attributed to the ascending dosage and the consequent sedative action of the bromide, and is therefore also to be employed in other nervous diseases in which large doses of bromides are indicated.

TOXICOLOGY.

The Intestinal Lesions Caused by the Elimination of Poisons and Report of a Case of Corrosive Sublimate Poisoning.—Gilbert and Hersher (*Bull. et mem. de la soc. anat. de Paris*, 1901, March) reports the results of a postmortem examination upon a case of corrosive sublimate poisoning in which death had ensued seven days after the ingestion of 30 g. of the poison. Special stress is laid upon the changes in the gastro-intestinal tract. The mucous membrane from the mouth to a small distance below the pylorus was congested and covered with numerous areas of blood extravasation and a few superficial ulcers. From about the middle of the duodenum up to the lowest portion of the small intestine, the mucous membrane was normal, then changes again began and increased in virulency as the colon was reached, the deepest ulceration existing in the descending colon. Changes were also found in the liver, heart, peripheral nerves and particularly in the kidney. The poison had therefore caused three varieties of changes in the various organs, that is by its entrance and absorption, by way of the blood stream, and during the process of its elimination. The elimination of the sublimate through the mucous membrane of the lower part of the gut, and especially in the colon causes changes analogous to those seen in dysentery, and also somewhat resembles the ulcers in enteric fever. The authors therefore believe that ulcers in intestinal diseases may also be caused by the elimination of toxins.

THE TREATMENT OF WHOOPING COUGH.

Vaccination in the Treatment of Whooping-cough.—D. Lofruscio (*Semana Medica, Buenos Ayres*, April 4, 1901) has treated 152 cases of whooping-cough, in many cases complicated with bronchitis or pneumonia, by means of vaccination. In 121 cases the children were vaccinated for the first time, and in 31 cases were re-vaccinated. This investigator believes that vaccination is a sure means of relieving the pertussis. Five cases are very carefully described. In most of them pneumonia and convulsions quickly disappeared after the vaccination, and while the cough persisted for a few weeks, it lost its spasmodic character.

Treatment of Whooping-Cough.—J. E. Godson, M.R.C.S., L.R.C.P., (in *Dublin Jour. of Med. Science*, June, 1901) advises the following treatment in whooping-cough: "Commence at once with the continuous inhalation of creosote by suspending creosote cloths in both the day and night chambers. The density of the vapour employed can easily be regulated by varying the number of cloths. Treat any accompanying bronchitis, and clear the lungs of all moist sounds as much as possible before using any special internal anti-spasmodic remedies. Antipyrin may be given in suitable doses in all cases where the lungs are fairly clear, provided that the circulation is good. Expectorants may be combined with the antipyrin. The chest and upper part of the spine should be treated by counter irritation. Good air, warm clothing, light and wholesome food are necessary in all cases."

SURGERY.

Gastric Ulcer.—A. B. Mitchell (*Medical Press and Circular*) concludes (1) Surgeons have not yet devoted sufficient attention to ulcer of the stomach. Ulcer is more commonly anterior than is generally acknowledged. (2) Those ulcers which do not resolve under medical treatment give rise to grave complications in direct proportion to their duration; these complications include pyloric obstruction, hourglass contraction, involvement of neighboring organs, and attacks of peritonitis resulting in troublesome adhesions. (3) There is no more serious surgical complication than extensive adhesions, owing to their tendency to involve large vessels, nerve-plexuses, and vital organs. (4) When there are extensive adhesions it is probably better to leave them alone and provide for rapid emptying of the stomach by gastro-enterostomy. (5) When the ulcer is on the anterior wall it may be possible to infold or excise it, which is the ideal method of treatment; but when posterior, this will generally be omitted in favor of gastro-enterostomy. (6) Posterior gastro-enterostomy is the operation of choice, it is quite as easy to perform as the anterior operation, sacrifices less of the jejunum, and establishes the new opening at the most favorable point for stomach drainage. (7) The simple and continuous suture is to be preferred for this and similar operations, without any artificial support. The abdomen should never be opened without a Murphy's button at hand, though the necessity for its use will not be frequent. (8) In patients past middle life early explorations must be more frequently undertaken if the gastric surgery of this period is to attain the triumphs to which it is entitled.

The Treatment of Panarthritis.—Schulze (*Münchener Med. Woch.*, March 12, 1901, Jahr. 48, No. 11) having had occasion to treat a case of panarthritis of the thumb in which operation was refused, observed that after the expulsion of the necrotic distal phalanx, the callus that had formed about it took its place and was capable of performing all its functions, the only defect being that it was slightly wider. He subsequently treated other cases expectantly with like results.

Subcutaneous Cocaine Injections Combined with the Inhalation of Small Doses of Chloroform.—Demmler (*Bulletin Medical*, 1901, No. 43) recommends the inhalation of small doses of chloroform at the moment that a subcutaneous injection of cocaine produces its anesthetic effect, claiming that the combination is of considerable value in that it prevents a too great strain upon the emunctories that eliminate chloroform. He obtained similarly good results with ether.

Phototherapy in Surgery.—Minin (*Die med. Woche.*, 1901, No. 12-13) has observed that a blue glass lamp of sixteen candle power has both a sorbefacient and analgesic power. He claims that it has no equal as far as quickness in its therapeutic action is concerned. He calls especial attention to the mental impression that such procedures produce and the important results to be obtained therefrom.

Gastric Ulcer.—B. F. Lund gives the following indications for the surgical treatment of gastric ulcer in the *Boston Medical and Surgical Journal*, June 6: (1) In perforation immediate operation is absolutely indicated. (2) In cases in which the symptoms fail to yield after medical treatment for a reasonable period, operation, consisting either of excision of the ulcer or gastro-enterostomy, should be performed and this before the patient has become so exhausted as to render surgical intervention dangerous. (3) In hemorrhage, where slight, frequently repeated bleeding promises to produce anemia or exhaustion, similar early operation should be done. (4) Where a patient has suffered more than one copious hemorrhage, operation should be performed, and the extent and nature of the procedure should be decided upon according to the power of the patient to withstand operative manipulations, and the conditions found during the progress of the operation.

Omentofixation.—Omentofixation (*Journal de Medicine de Bordeaux*, August 25, 1901, No. 34) is suturing the omentum to the posterior abdominal wall between that and the parietal peritoneum, in order to form vascular adhesions and so relieve the portal system. This is necessary when, in atrophic cirrhosis of the liver, endophlebitis and periphlebitis close the intrahepatic venules, causing ascites. Dr. Dubourg, of Bordeaux first performed omentofixation in France, in 1900. Animals upon which omentofixation has been done experimentally have all died, and the operations upon human beings have also terminated fatally as a rule. Of the 18 cases reported, six died soon after operation, three were unimproved, in four the improvement was doubtful, and in the remaining five the ascites was cured. Mongour believes

that it should never be performed, puncture being much more efficacious and much less dangerous. Besides, puncture may be repeated frequently.

Perforating Wounds of the Abdomen.—Vincent (*Revue de Chirurgie*, July, 1901), believes that no absolute rule can be formulated for the surgical treatment of penetrating wounds of the adbomen. He advises the expectant treatment, when the wound is due to firearms: when due to the kick of a horse, laparotomy is best at once; if due to pointed instruments, wait for signs of hemorrhage, torn intestine, etc., before operating; if due to instruments with sharp blades, exploratory laparotomy will generally be indicated. Besides, whenever internal hemorrhage is suspected, laparotomy should be performed immediately. Vincent reports three cases. In the first, a knife entered the stomach. The incision was enlarged and the stomach wound sutured. The second patient fell from a tree, landing on a stake, 45 cm. of which, breaking off, entered the iliac fossa. This was removed and ice was applied. Three days later an incision was made in the lumbar region, a sero-sanguineous collection evacuated, touched with the thermo-cautery, and the sinus allowed to heal. A month later he was well. In the last case, an omental hernia followed the penetrating abdominal wound. The omentum was resected after ligation, and returned into the abdomen, the ligature ends serving as drainage. From these results, Vincent advises the expectant treatment always. For as soon as any bad sign appears, laparotomy can be done.

Cancrum Oris Successfully Treated by Excision of the Cautery.—A. Z. C. Cressy, (*Annals of Surgery*, Aug., 1901), in the case of a child of seven years, cut through the upper lip and cheek very nearly as far as the zygoma, the knife passing through the sloughy mass, which was then dissected away from the cheek and from the gum. Two teeth were removed. The dentoline cautery was then freely applied to all the old tear laid bare. Finally the edges of the incision were drawn together with sutures. The after-treatment consisted chiefly in irrigation of the mouth with boracic acid lotion every two hours, the mouth being also washed out after food. The result is a linear scar across the cheek, somewhat fixed to the upper maxilla, with consequent immobility of the upper part of the cheek. The lower lip moves freely and the upper one fairly well.

What is True Conservatism in the Treatment of Appendicitis?—M. F. Porter (*Amer. Med.*, September 7, 1901) sums up the above treatment as follows:

Timely Operation.	Conservative Treatment, or Operation only when Other Treatment Fails.
1. Immediate mortality less than 2%.	1. Immediate mortality more than 10% of operated cases and more than 2% of all cases attacked.
2. Danger of hernia, *nil.*	2. Danger of hernia considerable (50% of cases requiring large or long-continued drainage).
3. Danger of bowel obstruction slight, if not entirely absent.	3. Danger of bowel obstructions real. (Three cases have occurred in the author's practice in late cases, and none in cases operated early).
4. Danger of recurrence, none.	4. Danger of recurrence 33 1/3% of cases not operated upon and more than 2% of cases treated by incision and drainage.
5. No danger of secondary abscess.	5. Secondary abscess not infrequent.

The author concludes his article by answering the question which is the title of his paper, and says that timely diagnosis and early operation are the truly conservative treatment of appendicitis.

DISEASES OF WOMEN.

Irrigation with Gelatinized Serum in Gynecology.—Lafond-Grellety (*Gaz. d. Gynecologie*, June, 1901) discussing the subject, mentions technique with the Auvard curette, which allows the passage of fluid through it. He uses the 10% gelatin and 1% carbolic acid solution, which, at body heat, will disinfect the surface as it is curetted and will also prevent hemorrhage. The slow continuous irrigation which this affords and the arrest of the frequency of hemorrhages in inoperable tumors lessens the pain for the time. In concluding the operation a stronger stream of water may be used to wash away the detritus.

The Treatment of Placenta Previa by Cesarean Section.—Dr, Donoghue discusses this subject in the *Boston Medical and Surgical Journal*, Vol. CXLIII., No. 23. He considers that placenta previa is still the most fatal condition with which the obstetrician has to deal. The treatment used in the past has not, he thinks, sufficiently safeguarded the life of the child as well as that of the mother. While craniotomy has become a thing of the past, there is not the same feeling about the induction of premature labor or the resort to severe operative delivery which no less surely than craniotomy takes away the chance of life from the child. All methods used in placenta previa have hitherto been directed towards stopping the hemorrhage and emptying the uterus. The author considers in detail induction of premature labor, rupture of the membranes, and manual dilatation with delivery by version. He does not approve of these. Cesarean section for placenta previa was recommended by Ford in 1892, on theoretical grounds. In 1894 Dr. Bernay, of St. Louis, performed the operation upon a patient with central placenta previa who was much exhausted from the loss of blood. She lived, but the child died of asphyxia in ten hours. He reports other cases by other surgeons which resulted unfavorably. Reynold, who has done nineteen Cesareau sections without loss of mother or child, considers the operation justifiable "whenever an intra-pelvic delivery will be fatal to the child." The writer considers that certain cases of placenta previa come under this category, namely: (1) cases of complete previa; (2) cases of previa in primiparae when signs of fetal or maternal exhaustion are evident; (3) when the condition of rigid as is present; (4) where there is a history of previous operative delivery; (5) in tranverse positions and in cases of prolapsed cord, if the cord is not easily returnable." The author's patient was 40 years of age, and had once previously been delivered by forceps. Her confinement was expected on August 12th. On August 6th bleeding commenced without pains, but caused no alarm. On August 12th her medical man was called and diagnosed placenta previa, but left the case. Next day the patient was seen again, but, the flow being slight, nothing was done until 5 P. M., when the patient was found to be in a state of collapse. The os was dilated enough to admit two fingers, it was rigid and completely covered by placental tissue. Labor pains were present. Temperature 99.4, pulse 140. Operation was advised at once, and was performed successfully. Whatever the reader may think of the value of Cesarean section in placenta previa, the above case is certainly not one which displays its merits to advantage, as there is no apparent reason why mother and child should not both have been saved by ordinary obstetric methods.

The Influence on the Fetus of Treating Syphilitic Mothers.—Riehl (*Wien. klin. Woch.*, June 27, 1901), has experimented upon 29 pregnant women with secondary syphilis. From a full review of the literature, it seems certain that, with recent syphilis in the mother, treatment has but a faint chance of causing the birth of a healthy child. Beside the general treatment of the mother, Riehl inserted one gram of unguentum hydrargyri in the vagina daily, keeping it in by a tampon. He begins these mercurial applications just as soon as pregnancy is even suspected. No symptoms of local irritation or of stomatitis were ever seen. Out of

33 syphilitic mothers, there occurred one abortion; three premature deliveries; two still-born infants at term; two syphilitic infants at term; and 29 normal infants at term. In all, a mortality of 12%, a morbidity of 21%. From this Riehl believes that a favorable prognisis for the coming child can be obtained by vaginal treatment of the pregnant mother. In his private practice, the results were ever better.

The Prophylaxis and Treatment of Puerperal Septicemia.—John F. Morgan (*Jour. Am. Med. Asso.*, Sept. 7, 1901), remarks that the treatment of sepsis will depend upon the skill and judgment of the physician and the condition of the patient. It would not be justifiable to open the abdomen without some physical reason. The different forms of sepsis should be thoroughly understood, for an operation would hardly be required except in pathogenic infection. When the operation is performed early, many organs will be needlessly sacrificed, and if performed late, the mortality will be increased. When there is continued fever with increasing physical signs, the operation is permissible; without the latter general symptoms would indicate systemic infection and surgical measures would only hasten the end. As to the value of the antistreptococcic serum the results have, on the whole, been disappointing. Statistics show the mortality to be about 35%. Many of the failures may have been due to the inferior quality of the serum. It is important to determine whether the case be one of simple or mixed infection. Curative effects are claimed for only a simple streptococcus infection.

Uteroplasty and Vaginal Hysteropexy.—J. Triénot believes that many cases of retroversion of the uterus can be cured by uteroplasty and vaginal hysteroplexy. (*L'Independance Medicale*, August 14, 1901, No. 33). He performs but these two operations for retroversion. Uteroplasty by the Doyen method is especially indicated when only retroflexion, not true retroversion, exists. The technique of the operation, as done by Doyen in Reims in 1897, follows. It in no way prevents future conception or labor. When pronounced retroversion occurs, vaginal hysteropexy is the best operation. It accomplishes ante-version. The technique of this operation is also given in full. It may be performed by the typical method, that of Mackenrodt, or that of Duehrssen. Abortion may be caused by the results of this operation. It also may cause retension of urine, which is never the case after uteroplasty.

MISCELLANEOUS.

Imperative Conceptions.—H. T. Patrick (*New York Med. Jour.*, September 7, 1901) gives the treatment as follows: The treatment of imperative conceptions, in the broadest sense, must embrace every means of breaking up a habit vicious and confirmed. As in the case of other bad habits, the same method is not applicable to every one, and an intimate knowledge of malady and individual is an enormous advantage, indeed, generally a pre-requisite of success. In the great majority of cases a source of systematic education or re-education based upon such knowledge constitutes the best treatment. An imperative conception is really a mental tic—a mental habit spasm—and, as Brissaud has found that the best therapeutic for tic of muscles is careful, graduated, oft-repeated and long-continued training of the individual in the suppression of abnormal movements, so the victim of an imperative conception must be carefully taught to suppress his obtrusive idea and its results. The first step in this education had better be an explanation to the patient of the nature and harmlessness of his affliction, for he is apt to be in dread of insanity, paralysis, death or crime. Naturally, this explanation must be suited to the mental capacity, beliefs and feelings of the person, but it must be plausible and encouraging; secure his confidence and awaken his courage. The next step must be to teach him to be controlled by reason and judgement instead of by feelings, emotions, and impressions. These neurotics are much like children and, like children, must be governed in different ways. Some can be reasoned with and by words made to see the folly of their ways; a positive statement is enough to arouse inhibition. Others can be led; still others must be driven. Pure suggestion sometimes suffices. A process of progressive demonstration is frequently useful. Having to deal with an affection essentially mental, treatment must be aimed at mental processes. Bitter tonics, "reconstructives," and so-called nervines are ridiculous remedies, except in a purely incidental way, and the same may be said of all assumed sources of "reflex irritation," unless it is considered wise to attack such suppositious part for its purely suggestive effect. Treatment by sudden compulsion is not successful, and generally does harm.

Typhoid Fever with Perforative Peritonitis, Cured by Medical Treatment.—Léon d'Astros (*Bulletins et Memoires de la Societe Medicale des Hôpitaux de Paris*, July 25, 1901, No. 26) reports a case of typhoid fever in a boy of seven, treated by cold bathing. On the 35th day, tenderness first appeared in the right iliac fossa, with pain all over the abdomen and vomiting. The baths were at once stopped, ice was applied to the abdomen, and opium and caffeine administered. His temperature fell from 104° to 98.4° F. The abdomen became tympanitic, he vomited bile, and was in so weak a general condition that the surgeons, when called in, refused to operate, believing that the anesthetic would kill him. Normal salt solution, with caffeine added, was injected subcutaneously. He slowly but gradually recovered. d'Astros is certain that perforative peritonitis occurred. He does not advise operation as a rule in perforation, since two of his cases died after operation. He appends the report of one of those cases.

The Treatment of Constipation.—A. Mazeran (*Presse Medicale*, June 22, 1901) distinguishes constipation which is due to spasmodic contraction of the colon from that due to atonic condition of the bowel. He states that the former is distinctly a condition due to diminished nerve force, and occurs in those who are emotional and suffer from worry and grave responsibilities. The abdomen is painful at times, extremely sensitive with physical worries to perastalsis. It is difficult to detect fecal matter by palpation. Constipation is increased before menstruation and diminished after it is once established, which he points out is directly opposite to the condition found in atony. The feces are covered with dry mucus, and are flat or in round hard masses. Flatus is rare. The condition is frequently accompanied by hiccough, the sense of restriction in the chest. Rectal injections are administered with considerable difficulty, and are frequently retained, giving rise to colic. The treatment should be directed to restoring the tone of the nervous system. The author recommends belladonna, 1 or 2 cg. in a pill or suppository. Asafetida, zinc valerianate and laudanum are also valuable, in combination with warm sitz-baths and rectal irrigation at a temperature between 33° and 36° C. Light massage and exercise are also useful. The bromides and drugs of that class are to be avoided, as is alcohol and spiced or highly seasoned foods. Purgatives are contraindicated, but a mild laxative is at times necessary. A useful combination is 1 to 2 cg. of belladona followed by a teaspoonful of castor oil or 40 cg. of cascara sagrada. It is well to complete the treatment by a course of tonic sedative waters.

Rhinology in Practice.—Aristide Malherbe discusses the diseases of the nose in the *Bulletin Medicale* (August 24, 1901, No. 67). These may be traumatic, inflammatory, specific, or tumors. Under traumatism come contusions, wounds, fracture, and luxation of the nasal bones. As a rule antiseptics, a collodion splint, and perhaps tamponning is all that is needed. Among the inflammations are furuncles, fissures, eczema, sycosis, and folliculitis. Disinfection and tar, mentol, or resorcin will constitute the treatment. Antiseptics are always necessary, especially after opening small abscesses, acne, etc. The tumors of the nose may be epithelioma, rhinoscleroma, and elephantiasis. The treatment is cauterization, or removal of the growths with rhinoplasty. The specific lesions of the nose are syphilis, tuberculosis or lupus, and leprosy. A chancre is rare upon the nose, but secondary and tertiary lesions are found. The secondary lesions are erosion; the tertiary, gummata, osteitis, or periostitis. Specific treatment should be instituted, and the nose touched with nitrate of silver. Rhinoplasty may become necessary. For lupus and leprosy the treatment consists of cauterization, scarification, and tonics.

Formulae.

NEURALGIA AND ALLIED CONDITIONS.

Sciatica.—(*The Med. Times and Hosp. Gaz.*):

℞

Olei terebinthinae	
Acidi acetici	āā f 3 vj
Camphorae	3 ij

M. S.: Apply to the part.

Neuralgiac Headache and Intercostal Neuralgia.—(*The Public Health Jour.*, July 19, 1901):

Olei gaultheriae	
Guaiacol	āā *m* x
Camphorae	
Menthol	āā gr. xv
Olei caryophylli	*m* v
Glycerini	
Petrolati	
Cerati	āā j

M. S.: Small quantity to be well rubbed in over seat of pain.

Earache.—(*The Monthly Cyclopedia of Practical Medicine*, Aug., 1901):

℞

Chloral camphoratis	gr. v
Glycerini	gr. xxx
Olei amygdalae dulcis	gr. x

M. S.: Apply a little on absorbent cotton and place in ear.

Liniment for Rheumatism.—(*Med. News*).

℞

Spiritus camphorae	
Tincturae opii	
Spiritus ammonii	āā f. ʒ ss
Olei olivae	f ʒ j

M. et fiat emulsio. S.: Apply locally four or five times daily.

Acute Rheumatism.—G. Dock (*Jour. Amer. Med. Assoc.*, Aug. 24, 1901) recommends the following prescription:

℞

Sodii salicylatis	3 ij
Sodii carbonatis	3 i
Aquae camphorae	q. s. ad f. ʒ vi

M. S.: Teaspoonful every hour.

CHILDREN'S DISEASES.

Vomiting in Pertussis.—W. Lyon (*Jour. Amer. Med. Assoc.*, Aug. 31, 1901) recommends the following prescription to prevent vomiting:

℞

Bromoformi	*m* ij
Chloretoni	gr. jss
Tincturae aurantii	*m* x
Mucilaginis acaciae	*m* xx
Aquae	q. s. ad f. 3 j

M. S.: To be used in one dose.

Or,

℞

Bromoformi	*m* ij
Chloretoni	gr. iss
Tincturae aurantii	*m* x
Glycerini	f. 3 j

M. S. To be used in one dose.

Paroxysms in Pertussis.—Shoemaker (*Jour. Amer. Med. Assoc.*, Aug. 31, 1901) recommends the following:

℞

Tincturae lobeliae	f. 3 ij
Sodii bromidi	3 iij
Spiritus etheris nitrosi	f. ʒ j
Spiritus limonis	f. ʒ iij

M. S.: One-half to one teaspoonful every one or two hours.

For severe cases:

℞

Potassii bromidi	gr. xvi
Chloral hydratis	gr. viii
Syrupi	f. ʒ ss
Aquae menthae piperitae	q. s. ad f. ʒ ij

M. S.: Teaspoonful at a dose. May be repeated two or three times at intervals of half an hour, if necessary.

Rheumatism in Children.—S. Solis Cohen (*Med. Rec.*, Sept 7, 1901) recommends this prescription:

℞

Sodii salicylici	ʒ ss
Tincturae ferri chloridi	f. ʒ ss
Acidi citrici	gr. x
Glycerini	f. ʒ iss
Olei gaultheriae	gtt. viii
Liquoris ammonii acitatis	q. s. ad f. ʒ viii

Bronchitis With Asthma in Children.—A. Caillé (*Med. News*, Aug. 24, 1901, from *Pediatrics*, Aug. 15, 1901):

℞

Potassii iodidi	3 j
Liquoris ammonii	f. 3 ss
Syrupi	f. 3 ss
Aquae	f. ʒ iij

M. S.: Teaspoonful every four hours.

Infantile Colic.—L. A. Starr (*Merck's Archives*, March, 1901) for mild cases orders the following:

℞

Sodii bicarbonatis	gr. xvi
Syrupi	f. 3 iv
Aquae menthae piperitae	f. ʒ ij

M. S.: Teaspoonful to a child a month old.

Gastro-Intestinal Diseases in Children.—(*Merck's Archives*, Aug., 1901):

℞

Tincturae opii deodorati	gtt. i
Bismuthi subnitratis	gr. v
Misturae cretae	3 j
Pepsini	gr. j

M. S.: To be used in one dose every three hours.

Gastro-Intestinal Diseases.—(*Merck's Archives*, Aug., 1901):

℞

Bismuthi subnitratis	3 j
Vini ipecacuanhae	
Tincturae nucis vomicae	āā *m* xx
Extracti hydratis fluidi	f. 3 iss
Tincturae hyoscyami	f. 3 ij
Elixir lactopeptine	q. s. ad f. ʒ ij

M. S.: One-half teaspoonful after each feeding.

EAR, NOSE AND THROAT.

Eczematous Rhinitis.—(*N. Y. Med. Jour.*, Aug. 24, 1901, from *Journal des praticiens*, June 22):

℞

Olei cardini	f. 3 j
Vaselini	
Lanolinae	āā 3 iiss
Olei caryophylli	gtt. v

M. et fiat unguentum.

Follicular Tonsillitis.—(*Jour. Amer. Med. Asso.*):

℞

Creasoti	*m* x
Tincturae myrrhae	
Glycerini	āā f. ʒ j
Aquae	q. s. ad. f. ʒ iv

M. S.: Use as a gargle or spray four or five times daily.

Nasal Douche.—(*Ingals, Med. News*).

℞

Sodii salicylatis	
Sodii boratis	āā 3 vj

M. S.: A teaspoonful to one pint of tepid water.

Sodii bicarbonatis	
Sodii chloridi	āā 3 x

Chronic Otorrhea.—Verbitsky (*Gazetta degli ospedali e delle cliniche*, May 21st, *New York Med. Record*, Sept. 14, 1901):

℞

Potassii iodidi	gr. xv
Tincturae iodi	f. ʒ iiss
Alcoholis	
Glycerini	āā ʒ iiiss
Pulveris iodoformi	gr. xv

M. S.: Small quantity of the above to be injected into the auditory canal and into the tympanitic cavity.

DIGESTIVE TRACT

Dysentery.—R. A. Mate (*Med. Rec.*, Sept. 7, 1901) is accredited with the following:

℞

Magnesii sulphatis	ʒ i
Acidi sulphurici diluti	
Tincturae opii	āā *m* x
Quininae sulphatis	gr. i
Hydrargyri perchlordi	gr. 1/32
Aquae menthae piperitae	gr. f. ʒ ss

M. S.: This dose every three hours.

Tuberculous Enteritis.—Smyth (*Med. Rec.*, Sept. 7, 1901) uses this prescription:

℞

Iodoformi	
Salol	āā ʒ ss
Acidi tannici	ʒ i

M. fiat in capsulae No. xii.
S.: One three times a day.

Flatulent Dyspepsia.—(*The Monthly Cyclopedia of Practical Medicine*, Aug., 1901). The formula is also known as "soda mint."

℞

Sodii bicarbonatis	
Sacchari	āā ʒ ij
Spiritus ammoniae aromaticae	*m* xl
Aquae menthae piperitae	f. ʒ viii

M. S.: Tablespoonful after each meal.

Dyspepsia of Hepatic Diseases.—Bommier (*N. Y. Med. Jour.*, Aug. 24, 1901, from *Nord Med.*, July 15, 1901) prescribes the following:

℞

Tincturae ipecacuanhae	
Tincturae boldo	
Tincturae gentinae compositae	
Tincturae nucis vomicae	āā *m* lxxv

M. S.: From fifteen to twenty drops after meals in a drink of hot chamomile infusion.

Dyspepsia with Eructations of Gas.—(*Kansas City Med. Record*):

℞

Pepsini	gr. iij
Bismuthi subnitratis	gr. x
Strychninae sulphatis	gr. 1/100
Thymol	gr. 1/4

M. et fiat chart No. 1. S.: After each meal.

Dysentery.—(*Batchelder, Ex.*)

℞

Plumbi acetatis	gr. vj
Tincturae opii	*m* xxx
Aquae	f. ʒ j

M. et fiat enema.
S.: To be repeated according to the frequency of the discharges

SKIN DISEASES.

Facial Erysipelas.—Brown (*Jour. Amer. Med. Assoc.*, Aug. 31, 1901) recommends the following:

℞

Acidi salicylici	gr. xx
Chrysarobin	gr. xx
Ichthyol	ʒ j
Lanolini	
Vaselini	āā ʒ ss

M. S.: To be used as a rub.

Urticaria.—Gauches (*Med. News*, Aug. 24, 1901, *Bull. Gen. de Therapeutique*, July 30, 1901) uses this prescription:

℞

Menthol	gr. iss
Alcoholis	
Spiritus aeteris	
Spiritus chloroformi	āā f. ʒ j

M. S.: Apply locally.

Chafing of the Skin.—(*Encyc. Med.*) Where skin surfaces which are in apposition have a tendency to chafe, the following will be found useful:

℞

Magnesii carbonatis	
Zinci oxidi	
Acidi borici	āā ʒ ij

M. S.: Apply to the affected parts.

Palmar Syphilides.—Ohmann-Dumesnil, (*Med. Rec.*):

℞

Acidi salicylici	gr. xxiiss
Ichthyol	ʒ ss
Unguenti aquae rosarum	ʒ viiss

M. S.: Apply each night and wear gloves.
After the above has cured the lesions, apply the following to ward off recurrences:

℞

Hydrargyri chloridi mitis	gr. xv
Unguenti aquae rosarum	ʒ viiss

Pustular Syphilids.—(*Jour. Amer. Med. Assoc.*):

℞

Hydrargyri chloridi corrosivi	gr. iij
Alcoholis	
Tincturae benzoini	
Glycerini	āā f. ʒ j
Aquae rosarum	q. s. ad f. ʒ iij

M. S.: Apply locally.

Acne.—Allen (*Med. Rec.* Sept. 7, 1901) advises the following:

℞

Ichthyol	
Resorcini	āā gr. x
Pulveris calaminae	gr. xx
Unguenti zinci oxidi	gr. ʒ i

M. S.: Apply externally.

Extracti ergotae fiudi	f. ʒ iiss
Tincturae ferri chloridi	
Glycerini	āā f. ʒ iss
Extracti cascarae fiudi	f. ʒ i
Syrupi simplicis	f. ʒ ii

M. S.: One drachm three times a day

Furuncles.—G. H. Fox (*Photographic Atlas of the Diseases of the Skin*, Part VIII) advises the following paste after the boils have been washed with diluted carbolic acid:

℞

Acidi salicylici	v
Tincturae calendulae	v
Amyli	v
Unguenti zinci oxidi	q. s. ad c

M. S.: Use as an ointment.

Ringworm of the Scalp.—T. C. Lusk (*The Monthly Cyclopedia of Practical Medicine*, Aug., 1901, from *Med. Age*) advises the following:

℞

Chrysarobin	v
Ichthyol	iij
Acidi salicylici	ij
Petrolati	q. s. ad c

M. S.: To be used two or three days followed by a soothing ointment.

He also gives Brocq's powder:

℞

Zinci oxidi	ij
Hydrargyri chloridi mitis	ij
Bismuthi subnitratis	q. s. ad x

Leg Ulcers.—I. W. Hunnicutt (*Mississippi Med. Record*, June, 1901) recommends the following prescription for this condition:

℞

Acidi carbolici	ij
Acidi boracici	x
Pulveris camphorae	viiss
Ichthyol	xx
Olei andropagen nordi	q. s.
Unguenti zinci oxidi	q. s. ad c

M. et fiat unguentum.
S.: Apply once a day.

A lotion for this condition is also given:

℞

Tincturae belladonnae	x
Aquae cologniensis	q. s. ad c

M. S.: To be used as a lotion and applied to the part.

Herpes.—G. H. Fox (*Photographic Atlas of the Diseases of the Skin*, Part VIII) gives Lebour's formula for shortening the attack:

℞

Cocainae hydrochloratis	ij
Resorcini	iij
Alcoholis	q. s. ad c

Shampoo Receipt.—(*Bulletin of Pharmacy*, July, 1901):

℞

Saponis	f. ℥ iv
Potassii carbonatis	℥ j
Alcoholis	f. ℥ x
Aquae	q. s. ad f. ℥ xxxii

M. S.: Dissolve the soap in 20 fluidounces of water by the aid of heat (restoring any loss of volume by the addition of more water); in the hot liquid dissolve the potassii carbonatis, allow the mixture to cool somewhat, and then add the alcoholis and enough aquae to make 32 fluidounces. This mixture may be perfumed or colored, if desired.

Hair Tonic.—(*Bulletin of Pharmacy*, July, 1901):

℞

Olei ricini	f. ℥ iv
Quininae sulphatis	3 j
Olei myrciae	f. 3 ss
Alcoholis	q. s. ad f. ℥ xxxii

M. S.: Mix, dissolve, and filter.

Sweating Feet.—Professor Kaposi (*Bulletin of Pharmacy*, July, 1901) recommends the following:

℞

Sodii salicylici	3 ss
Potassii permanganas	3 j
Bismuthi subnitratis	3 xii
Pulveris talci	℥ iii

M. S.: Dust on feet and into stockings and shoes every morning.

Burns.—*Jour. Amer. Med. Assoc.*, Aug. 31, 1901, 1901):

℞

Hydrogenii peroxidi	℥ ss
Adipis lanae	℥ j
Olei rosarum	gtt. ij

M. S.: Apply locally

Hyperidrasis.—G. H. Fox (*Photographic Atlas of the Diseases of the Skin*, Part VIII) advises the following to be used internally:

℞

Pulveris cretae compositae	3 vi
Pulveris cinnamoni compositae	3 ij
Sulphuris praecipitatis	℥ ij

M. S.: Teaspoonful twice a day.

GENITO-URINARY ORGANS.

Gonorrhea, Lingering or Gleet.—(*Examiner*, from *New England Med. Monthly*):

℞

Extracti hydrastis fluidi	f. ℥ j
Bismuthi subnitratis	3 j
Boro glycerini (50%)	
Mucilaginis acaciae	āā f. ℥ ss

M. S.: Use as an injection.

Leucorrhea.—Burtenshaw uses the following (*Med. Record*, July 6, 1901):

℞

Pulveris aluminis	
Zinci sulphatis	
Acidi carbolici	
Sodii biboratis	āā ℥ j
Aquae	f ℥ vi

M. S.: Tablespoonful to a quart of water. To be used as a douche.

Gonorrheal Vaginitis.—(*Merck's Archives*, Aug., 1901):

℞

Pulveris alum	
Pulveris boracici acidi	āā ℥ viii

M. S.: Two teaspoonfuls to a pint of water for a child; four teaspoonfuls to a quart of water for an adult. Inject night and morning.

Prostatorrhea.—(*Examiner*):

℞

Argenti nitratis	gr. v
Aquae distillatae	f. ℥ j

M. S.: Instil a few drops into deep urethra once daily with deep urethral syringe.

When result of masturbation. Also daily use of cold metal sound.

℞

Extracti ergotae	gr. xxiv
Extracti nucis vomicae	gr. vj
Extracti gentianae	gr. xxiv

M. et fiat pilulae No. xxiv.
S.: One pill three times a day after meals.

In anemia and relaxation.

Tincturae nucis vomicae	m xvj
Tincturae cantharidis	m viij
Liquor ferri et ammonnii acetatis	q. s. ad fl. ℥ viij

M. S.: Tablespoonful three times a day after meals.

Prostatic Hypertrophy.—Guiteras (*Medical Record*, Sept. 7, 1901) recommends the following:

℞

Tincturae belladonnae	m viis
Potassii acetatis	gr. xv
Aquae menthae piperitae	q. s. ad. f. 3 i

M. S.: This dose three times a day.

Ointment for Orchitis.—The *Jour. des praticiens* and *N. Y. Med. Jour.* give this formula

℞

Lanolin	XL
Guaiacol	V
Methyl salicylatis	XX

M. *N. Y. Med. Jour.*

Gonorrheal Urethritis.—*Merck's Archives*, Aug., 1901):

℞

Bismuthi subnitratis	3 iv
Mucilaginis acaciae	f. 3 iv
Aquae	f. ℥ iij

M. S.: Shake. Use as an injection night and morning.

MISCELLANEOUS.

Astringent Dentifrice.—Sabarazes (*N. Y. Med. Jour.*, Aug. 24, 1901, from *Jour. de Medecine de Bordeaux, Nord Medical*, July 15, 1901) recommends the following:

℞

Sacchari	gr. viiss
Acidi benzoici	3 ij
Tincturae krameriae	f. ℥ ss
Alcoholis	f. ℥ iii
Olei menthae piperitae	
Olei cinnamoni	āā m vii

Anemia.—Blackwood (*Med. News*, Aug., 1901) uses this prescription:

Euquinine	3 j
Ferri lactatis	3 ij
Liquoris acidi arsenosi	f. 3 iss
Tincturae lavandulae compositae	f. ℥ ss
Elixir aurantii	q. s. ad f. ℥ iv

M. S.: Teaspoonful four times a day.

Ascites.—A. H. Begg (*Med. Rec.*, July 6, 1901) recommends the following:

℞

Elaterini	gr. 1/15
Strychninae sulphatis	gr. 1/40
Glonoini	gr. 1/200
Extracti digitalis	gr. 1/4
Caffeinae citratis	
Pulveris caryophylli	āā gr. i

M. et fiat in pillulae No. I.
S.: One capsule every three to six hours.

For a Black Eye.—(*Med. Standard*, July, 1901, from *Med. Summary*):

℞

Ammonii muriatis	ʒ j
Glycerini	f. ʒ j
Aquae	Oj

M. S.: Bathe frequently.

Asthma.—Jackson (*Med. Record*, July 6, 1901) is accredited with the following:

℞

Sodii iodidi	
Sodii bromidi	āā gr. ij
Extracti euphorbii fiudi	
Tinctura lobeliae	āā gtt iii
Nitroglycerini	gr. 1/200

M. S.: Take the above quantity at a dose and repeat in half hour if necessary.

Pericarditis with Effusion.—A. Caillé (*Med. News*, Aug. 24, 1901, from *Pediatrics*, Aug. 15, 1901):

℞

Sodii salicylici	gr. v
Potassii iodidi	gr. ij

M. S.: The above dose to be given four times a day in water.

Aseptic Ointment.—*N. Y. Med. Jour.*, Aug. 31, 1901, from *Monde pharmaceutique*, August 5, 1901):

℞

Pulveris iodoformi	gr. xv
Salol	ʒ ss
Pulveris borici acidi	
Pulveris antipyrin	āā ʒ i ¼
Vaselini	ʒ ij

M. S.: To be used in dressing wounds, etc., etc.

Intestinal Worms.—(*New Eng. Med. Monthly*, Aug., 1901, from *La Presse Medical*):

℞

Cocaine hydrochloratis	grs. ii ¼
Extracti belladonnae	grs. iii
Aquae valerianae	f. ʒ ii ½

M. S.: To be given a few drops at a time before and during the ingestion of the capsule of extract of male fern.

Atonic Dropsy.—(*New Eng. Med. Monthly*, Aug., 1901):

℞

Infus. colocynthidis	f. ʒ iv
Spiritus aetheris compositae	f. ʒ ss
Syrupi aurantii	f. ʒ ss

M. S.: Teaspoonful every two hours.

Vomiting in Cerebral Tumors.—(*New England Med. Monthly*, Aug., 1901):

℞

Potassii iodidi	ʒ j
Aquae distillatae	f. ʒ j

M. S.: Ten drops in water after meals, gradually increasing to full physiological action.

To Prevent Loosening of Teeth.—(*Merck's Archives*, August, 1901):

℞

Acidi tannici	ʒ ii
Tincturae iodi	ʒ i
Potassii iodidi	gr. xv
Tincturae myrrh	*m* xx
Aquae rosarum	f. ʒ vi

M. S.: Teaspoonful in water to rinse the mouth every two hours.

Uterine Subinvolution.—Hirst (*Examiner*):

℞

Strychninae sulphatis	gr. 1-20
Quininae sulphatis	gr. 2
Extracti ergotae	gr. 1

M. et fiat pilullae No. 1.
S.: At one dose. To be repeated thrice daily.

Asthma.—Anders (*Medical Record*, Sept. 7, 1901) advises this prescription:

℞

Potassi iodidi	ʒ iiss
Tincturae lobeliae	f. ʒ ss
Syrupi sarsaparillae compositi	f. ʒ ii

M. S.: One drachm every two hours.

In Tabes to Stimulate Circulation.—Pearce (*Med. Record*):

℞

Ammonnii chloridi	f. ʒ iv
Glycerini	f. ʒ j
Tincturae capsici	f. ʒ iij
Aquae menthae piperitae	q. s. ad f. ʒ xii

M. S.: Rub on the body daily for twenty minutes with massage.

Enlarged Lymphatic Gland.—(*Dom. Med. Mon.*):

℞

Syrupi ferri iodidi	f. ʒ j

S.: Five to thirty drops, well diluted after each meal.

℞

Tincturae iodi	fl. ʒ j

S.: Paint over enlargements thoroughly and repeat as soon as the dark color commences to disappear.

℞

Olei hydrargyri (U. S. P.)	ʒ j

S.: Rub over the enlarged glands once daily.

Heart Failure in Typhoid Fever.—(*The Monthly Cyclopedia of Practical Medicine*, August, 1901):

℞

Spiritus ammoniae aromaticae	f. 3 vi
Tincturae digitalis	f. 3 ij
Elixir simplicis	f. ʒ iv
Aquae distillatae	q. s. ad f. ʒ iij

M. S.: Shake. Teaspoonful every three hours.

Cardiac Dropsy.—Bartholow (*The Monthly Cyclopedia of Practical Medicine*, Aug., 1901) advises the following:

℞

Infusi digitalis	f. ʒ iii 1/3
Aceti scillae	f. ʒ ss

M. S.: Tablespoonful two or three times a day.

A Good Diuretic Mixture.—(*Bellevue Disp.*):

℞

Potassii citratis	ʒ j
Tincturae hyoscyami	f. ʒ j
Aquae	q. s. ad f. ʒ j

M. S.: One teaspoonful three times a day as a diuretic.

Malarial Cachexia.—Guice (*Med. Fortnightly*):

℞

Quininae sulphatis	ʒ j
Tincturae ferri chloridi	ʒ v
Liquoris acidi arsenosi	ʒ iss
Potassii chloratis	ʒ j
Syrupi zingiberis	q. s. ad ʒ iv

M. S.: One teaspoonful, in water, t. i. d.

Paralysis Agitans.—(*Examiner*). The following to be used to quiet tremor or induce sleep:

℞

Hyoscinæ hydrobromatis	gr. ss
Extracti cannabis indicae	gr. xxiv

M. et fiat capsules No. c.
S.: One to two capsules once or twice daily.

℞

Extracti cannabis indicae	gr. vj
Extracti gelsemii	gr. iv
Zinci valerianatis	gr. xxiv
Extracti conii	gr. iv

M. et fiat pilulæ No. xxiv.
S.: One to two pills three times a day.

Therapeutic Monthly

A Journal Devoted to the Collection and Dissemination of Therapeutic Knowledge

Owned and Published by THE MEDICAL JOURNAL UNION (Limited), of Philadelphia, and Conducted Exclusively in the Interests of the Medical Profession.

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Malta Fever.—Among the fruits of our new colonial possessions we may count the increase of our knowledge of the febrile conditions prevalent there. A comparison of these febrile conditions with those found in other tropical and subtropical parts of the globe, is interesting. In the *Journal of Medical Research* for July, 1901, Dr. Joseph J. Curry, who has seen military service in the Philippines, as well as among the soldiers in many of our hospitals in this country, discusses the condition of Malta Fever. Dr. Curry is of the opinion, which is held by many others, that Malta fever is not an uncommon disease in the Philippine Islands, and is by no means limited geographically as has been thought heretofore. He reported 16 cases of the disease while in the Philippines, in all of which there was a positive serum reaction with the micrococcus melitensis, and the clinical history corresponded with the descriptions of Malta fever given by Manson, Bruce and other English authorities. Since his return to this country he has studied eight cases in the Government hospital at Hot Springs, Arkansas, occurring in soldiers who had returned from foreign service. These cases, on admission, were thought to be chronic rheumatism, but were not benefited by anti-rheumatic nor anti-malarial treatment, nor have they improved in the favorable environment. In spite of treatment and the favorable conditions surrounding them, there were recurrences of acute rheumatic pains and swellings, and of fever of varying severity. The course of the disease is prolonged; in these cases from 6 to 16 months. There are present anemia, profuse sweatings and constipation. Malarial fever and typhoid were excluded. Dr. Curry found the serum reaction present in all of these cases. Prof. Wright, of the Royal Army Medical School at Netley, was the discoverer of the action of the specific serum on the micrococcus melitensis of Bruce. In 1897 he found that the serum of those ill or recently convalescent from Malta fever possessed in a high degree the power of agglutinating and precipitating the micrococcus in both culture and salt solution in suspension. He made the interesting observation that this reaction took place more quickly in Malta fever than does the Widal reaction in typhoid, and is also present in a much higher dilution and is much more marked. Dr. Curry, in this article, recommends a somewhat different method of performing the test than that suggested by Wright. He is convinced that Malta fever is a very widespread disease in tropical and subtropical countries, and he mentions the fact that English surgeons have reported cases from all the Mediterranean stations, from China, India and West Indies, and that in our army service cases have been reported from Porto Rico and the Philippines. In a series of four cases which he reports in soldiers and sailors recently returned to this country, one from the South Pacific Islands and three from the West Indies and the coast of South America, the wide separation of their stations gives an idea of the prevalence of the disease. His recommendation that the sedimentation test with the micrococcus melitensis be added to the list of routine blood examinations will be cordially seconded by the profession. As Dr. Curry points out, in our own Southern States we have fevers not typical of either malarial fever or typhoid fever, and it is possible that many of these may be Malta fever.

The Teaching of Massage in Medical Schools.—There are some patients who are not benefited by the administration of drugs. These patients wander from one physician's office to another and finally drift into the hands of the irresponsible quack, in the vain hope of finding relief. They are suffering from a perverted metabolism induced primarily by a shattered nervous system. There is the hypochondriac, the hysterical, the neurasthenic, or the neurotic in whom the reflexes are in a state of morbid excitability; there is also the patient with the sluggish circulation, with thickened joints, old exudates or indolent ulcers. They all clamor for relief and find none in the long list of drugs recommended for their diverse affections. These are the cases in which hypnotism, hydrotherapy, electricity and massage are especially indicated, and it is to the neglect of these later therapeutic measures that the physician owes his failure to achieve results. Spin

olo, in a paper entitled "Kurpfuscherei" (*Aerzte-Korrespondenz*, No. 12, 1900), says: "It is generally considered that many physicians are not up to date and that, with regard to the knowledge and technique of the numerous therapeutic measures, the education of our young physicians is incomplete and insufficient, so that the patients who prefer the quack to the physician have extenuating circumstances in their favor."

In our Universities and the hospitals belonging to them no attention has been paid to the great importance of caring for the patients in accordance with the peculiarities of each case, nor are the auxiliary means of treating disease, the so-called physical methods of healing, sufficiently appreciated. "The physician who practices massage", says Prof. Zabludovski, "often meets cases in which some members of the body have lost their function, while two or three readily performed movements would have been sufficient to accomplish *restitutio ad integrum*. The same is true of old affections of the joints causing loss of function and muscular atrophy, while a few more or less vigorous rubbings of the joint would have been sufficient to soften the exudate, cause its absorption and thus remove the cause of the disease".

One fails to see any adequate reason why hypnotism, hydrotherapy, massage and electrotherapy should not occupy a prominent place in our system of therapeutics and form an integral part of our medical curriculum. Massage, especially, should receive the closest attention for it can only be learned by actual experience and can be practiced by the physician in private practice. To leave the work altogether to the professional masseur is just as unreasonable as it would be to leave a typhoid-fever patient altogether to the care of the professional nurse. Some hold that massage should only be performed by the trained physician or under his immediate supervision, to be of any use at all. This statement may be debatable. An institute for the systematic instruction of medical students and practitioners in the art of massage has recently been established in connection with the University of Berlin, and judging from a brief description of the work done there, by Prof. Zabludovski, it would appear that it might well serve as a model for similar institutions in this country.

..**The "Ecole Lailler" of the St. Louis Hospital, Paris.**—In antique *Pediatrics* for October 1, 1900, Dr. A. D. Mewborn describes the Lailler school for children with tinea tonsurans, favus and alopecia areata, in the St. Louis Hospital, Paris, giving some excellent photographs of the school, which was founded in 1895. It consists of a three-story building surrounding three sides of a hollow square, about a courtyard which forms the playground for 350 children. A fence separates the boys from the girls. Outside of school hours each child visits an epilator, of whom there are 16, once a week. All the diseased hairs, as well as a margin of one to two cm. of sound hairs around each patch, are removed. The rest of the scalp is shaved, rubbed with a solution of tincture of iodin, potassium iodide and glycerin, and a cap tied over it. Once a week, also, the director and founder of the institution, Dr. Sabouraud, inspects each child. He applies croton oil to each diseased hair follicle, the contents of which are expressed, and areas are mapped out for epilation. These children are cured in from three to four months. After a child has been discharged, he returns once a month for two months, for observation. Then, if no signs of recurrence have appeared, he receives a certificate to show that he is cured. The cases of favus and alopecia areata live in another building. Sixty patients with alopecia areata are treated by the Finsen electric light method three times a week for three-quarters of an hour. These cases are generally cured in two or three weeks. The favus cases, about 15 in number, are treated by monthly epilation, and the daily application of tincture of iodin. Paris contains almost 3,000 cases of tinea, about 5 per cent. of the school population.

Bacteria Resistant to Acids.—Möller has directed attention to this important subject in an address* delivered before the British Congress on Tuberculosis. In this communication he has brought some very valuable suggestions to our notice. In view of the fact that a number of bacteria react to stains and resist decolorization by strong acids in a manner similar to the tubercle bacillus, the etiological significance of this bacillus, based upon its acid-resisting powers, while still of great value, cannot hold the diagnostic importance which has been accorded it so generally by clinicians.

It has long been known that the staining reaction of the lepra bacillus, the smegma bacillus, and the bacillus of the avian tuberculosis is almost identical with that of the tubercle bacillus. The size of the lepra bacillus and the fact that it cannot be cultivated upon artificial media, and its constant association with leprous nodules, are features so distinctive that they render confusion between this microorganism and the tubercle bacillus scarcely possible. Decolorization of the smegma bacillus by means of prolonged washing with alcohol has been accepted by some as conclusive evidence to identify this bacterium. The appearance of the cultures of the bacil-

*See Lancet, July 27, 1901. Abstract, Philadelphia Medical Journal August 17, 1901.

lus of avian tuberculosis and the temperature conditions at which these thrive are sufficient to distinguish this micro-organism.

There is a group of micro-organisms, comprising a bacillus existing in butter, discovered by Petri and Rabinowitsch, a bacillus found in milk, described by Möller, a bacillus found on grass and in cattle-fodder, and one found in the manure of certain herbivora, which is practically identical with the tubercle bacillus in point of size, tinctorial reaction, and acid resisting powers, but differing from it in cultural and pathogenic properties. The very slow growth, the cultural appearances, and the fact that incubation temperature (at 37° C.) is best suited for its development, are points which serve to assist in identifying the bacillus of human tuberculosis. The injection of tubercle bacilli into animals susceptible to this infection, is always followed by the development of typical tubercles which are characteristic, macroscopically as well as microscopically. The inoculation of pseudo-tubercle bacilli, in a limited number of cases under certain conditions, is followed by a development of a tuberculous-like disease. The tubercle-like nodules that form are of an inflammatory nature and show a tendency to suppurate. They do not present the well-defined histological characteristics of the tubercle, namely—the caseous substance, the giant, epitheloid, and lymphoid cells.

Möller, Pappenheim, Fränkel, and Rabinowitsch have found bacilli in sputum, which were not tubercle bacilli, but resembled these bacteria in size and in staining reaction. A lesson that we have long since learned and one which seems to be emphasized by the communication of Möller, is that isolated clinical signs, without the correlation of other symptoms, are, as a rule, without great diagnostic significance. We believe that the following conclusion which he has drawn should be accepted as a valuable diagnostic hint: "In those cases in which physical symptoms are entirely absent and the suspicion of tuberculosis is based on the existence of bacilli resistant to acids in the secretions of the respiratory organs, the diagnosis may be confirmed by the following simple method based on the slow growth of the tubercle bacillus and its peculiar temperature requirements. The secretion in question is mixed with nutritive bouillon and kept at about 30°. If there is a visible increase in the bacteria resistant to acids it is certain that it is not the genuine tubercle bacillus."

The Antispetic Power of Silver Preparations.—The name of Credé is instinctively linked with the employment of silver preparations for therapeutic purposes, and usefulness of Credé's methods are too well known to require further emphasis. The inaccessability however, of some internal lesions for which the silver could be used to advantage, has whetted the zeal of pharmacologists to devise some means by which it can be administered in suitable doses with impunity, without detracting from its therapeutic efficiency. The various indications for the internal employment of soluble silver preparations have been embodied in a masterly article by Credé in the *Berliner Klinische Wochenschrift* of September 16, 1901. The employment of metals in the treatment of wounds is an ancient procedure. Cadmium was recommended by Hippocrates for wound treatment. But the researches of Credé and of Halstead of Baltimore have somewhat revolutionized the silver therapy by the demonstration of the inhibiting power toward bacteria possessed by the silver. The intravenous administration of silver salts appears to have given many brilliant results, especially in a case of pulmonary gangrene quoted by Credé in the above mentioned journal. Even in septic cases of scarlet fever due to mixed infection, injunctions of silver salts have been found valuable. While many substitutes and organic preparations ophthalmic neonatorum, there are ophthalmologists with extensive experience who claim that silver nitrate has not yet been efficiently replaced.

The Practice of Medicine in Ancient Times.—The historical side of the practice of medicine receives as a rule less study on the part of the majority of medical men than it deserves. The reason of this is evident. The demands upon the physician's time, in order to keep abreast of the advances now being made, are so great that it leaves but little leisure for him to devote himself to the study of the knowledge of medicine possessed by the great Eastern and Western nations of antiquity. A glance through the historical works devoted to the subject, and which are far less extensive to our minds than they deserve to be, would prove a genuine surprise to the majority of us. In the earliest times, as is well known, there was a blending of the offices of priest and physician, and the conception of disease dealt with the supernatural and especially with "demon possession." Among the Egyptians there was a gradual separation of priestly and medical duties, and Herodotus tells us that specialists in medicine were the order of the time, certain physicians being expert in diseases of various parts of the body. It was the custom to expose the sick in public places so that they might have the benefit of the advice of passers by upon their ailments. The Egyptians placed great faith in hydrotherapy, and they regarded nearly all disease as due to indis-

cretion of diet. It was their custom to employ purges, emetics, and plasters used for three consecutive days each month. Explicit directions have been handed down to us as to the precise manner of employing these agents. The Hebrews were far advanced in their knowledge of hygiene. They exercised strict regulations as to diet and practiced circumcision, separation, ablution and combustion of infected garments. The use of gold, silver, lead, tin, iron and brass is mentioned by Moses. The most ancient recipes on record are found in Exodus, consisting of odoriferous ointments and confection. The influence of suggestion was not overlooked, and in Samuel is mentioned the use of music as a remedy. The Chinese have a work in 40 volumes which dates to a period very early in the Christian era and perhaps is much older. It is called *ching che chun ching*. Eight of those volumes are devoted to *Luy-Fang* (Pharmacology). Their materia medica was a formidable one, Ginseng they regarded as a panacea. Opium is recommended as an anodyne and in dysentery. Mercury both raw and oxidized was used, and among other drugs were musk, rhubarb, tea, camphor, asafetida, the bones of animals, certain vegetables, wax, etc. The Hindoos practiced lithotomy and extraction of the fetus as well as venesection. In the famous work of Susruta, 127 surgical instruments are described, as well as the use of actual cautery and alkaline caustics. Gourds were used as cupping glasses, and leeches were recommended in certain cases. Astringent and emollient applications, leaves, pledgets, threads and bandages as well as purgatives, emetics, diaphoretics, baths, stimulants, sedatives and narcotics. Hippocrates, among the Greeks, represented the highest development of medicine in the centuries before Christ. He employed diet, baths, exercise, blood-letting, the actual cautery, and the knife. His materia medica included a large list, including many drugs which are in use to-day. We know that Podilirius, who was a famous surgeon and who lived in the thirteenth century before Christ, and was a son of Aesculapius, practiced venesection. This general sketch of some of the methods of treatment in vogue hundreds of years ago, gives but a very scant conception of the wisdom of many of the early physicians in their grasp of the treatment of disease. Their doctrine of causes was essentially erroneous, but in the empiricism which they practiced, flattering results were often obtained. Hippocrates believed that as a general principle of treatment we should prescribe a drug, which would produce in the patients symptoms contrary or opposite to those from which he suffered, but he said there were a small number of cases in which *similia similibus curanter*. It will thus be seen that he anticipated the doctrine of Hahnemann by over 2000 years, but that his discrimination was such that, instead of regarding it as a universal principle, he saw that it had been but a very limited application. The study of the historical and literary side of the medical art shows graphically how our knowledge, or rather our opinions, upon both etiology and treatment, especially the latter, have travelled in cycles, and it also shows the truth of an old French philosophers observation that, given a wrong premise and evolving upon it a wrong system, and many grains of truth will be found in its ramifications. In the particular case of the treatment of disease, it was the empirical prescribing of remedies rather than the conception of disease itself which brought about the results recorded. Gradually empiricism is giving way to a rational conception of disease, and as it does so, we are impressed with many of the truths which the accumulated wisdom of the ancients laid down, but we go far beyond this, for we are enabled to explain that which was hereto inexplicable, and to widen our scope of knowledge and increase our usefulness as medical men.

The Interpretation of the Pure Food Law.—A recent decision has been handed down by the Dairy and Food Commissioner of Pennsylvania regarding the use of preservatives by manufacturers in such food-stuffs as cider, catsup, mince meat, jellies, preserved fruit, maple syrup, and grape juice. The particular ruling was an interpretation of the Pure Food Law of 1895, which reads as follows: "Articles of food that can be preserved by the use of improved processes, so as to preserve them from decay or change, shall have no preservative added other than salt, syrup, sugar, saltpetre, spices, vinegar or wood smoke." Until a few years ago salicylic acid was the drug employed for the purpose of preventing fermentation or decay in preserved foods. At that time Dr. Leffman, of this city, in common with others, expressed the opinion that salicylic acid had an injurious effect upon the organism, and upon this recommendation its use was prohibited. In its place, however, sodium benzoate was recommended. Since this time it has been generally employed as a preservative. The recent decision of the Commissioner will prevent the employment of this agent. Dr. Leffman is quoted as of the opinion that sodium benzoate is the least harmful of all the preservatives that may be used. It has the distinct advantage of being employed necessarily in small quantities on account of the nauseous taste which larger doses would give the product to which it is added. Wood smoke and vinegar are far more dangerous than sodium benzoate. All legislation tending to improve the quality of preserved foods is to be welcomed by the profession and the public generally,

but such legislation must be wisely enacted and must not lose sight of the vast commercial interests which are involved in such enactments. There seems to be no rational ground of objection to the employment of benzoate of sodium. As we have stated, the quantity necessary to preserve foods is very minute and larger quantities would add to the products an unpalatable taste which would render them unsalable. While the interpretation of this act by the Commissioner appears too sweeping, it is eminently a mistake in the right direction, and legislation will probably so amend the law of 1895, that benzoate of sodium may be employed by manufacturers.

The Conclusions of the British Congress on Tuberculosis.—In the present number we publish the resolutions which were passed at the close of the General Meeting of the British Congress for the Prevention of Tuberculosis, which was held recently in London. These resolutions embody the general concensus of opinion as to the best means of combating the spread of tuberculosis, and the most improved methods of its treatment. Tuberculous sputum is recognized as the main agent for the conveyance of the virus from man to man, and it is forcibly recommended that indiscriminate spitting should be rigorously suppressed. Faith is expressed in the method of educating the public and especially those suffering from phthisis, by supplying them with tracts containing instructions with regard to the prevention of the disease, and the pocket spittoon is advised as a hygienic necessity. Voluntary notifications by medical practitioners, rather than compulsory notification, is advocated. The opinion of of the Congress as to Professor Koch's paper is indicated by the advice, that medical officers of health should continue to use every precaution to prevent the spread of tuberculosis by milk and meat, and that in view of the doubts thrown upon the identity of human and bovine tuberculosis, the Government be requested to institute an inquiry into this question. The concensus of opinion of this Congress is, that overcrowding, defective ventilation, damp and unsanitary conditions in the houses of working classes, both limit the possibility of curing consumption, and increase the predisposition to, and the spread of the disease. The Congress acknowledged the indisputed value of sanatoria, and advised the attention of the government to the necessity for antitubercular dispensaries as the most practical means of treating consumption among the industrial and indigent classes. Especial stress is laid upon the value of great national societies in the educational working of studying the prevention of the disease, and the opinion is expressed that through the agency of these societies, public opinion may be formed and the duties of public health officers made much easier of performance, and far more effective by intelligent co-operation.

A Substitute for Vaccination and Diphtheria Antitoxin.—In view of the prevalence of the mild epidemic of small-pox in Philadelphia and the satisfactory increase in the number of vaccinations on the part of the public, the appearance in one of the Philadelphia evening papers of a substitute for vaccination which, it is affirmed, is in use at a certain secular orphan asylum in Philadelphia, is a backward step which, as medical men, we should at once brand with the stamp of professional disapproval. It is stated that: "One grain of sulphate zinc and one grain of foxglove, sometimes called digitalis, mixed with two tablespoonfuls of water; then when thoroughly mixed, to which is added four ounces of water, and a teaspoonful taken every hour for 12 hours," is a sure specific not only for small-pox, but for any contagious disease. It is said to be especially efficacious in malignant scarlet fever, and the statement is given out that in every case of the disease the symptoms will disappear in 12 hours "even when pits begin to form in the case of small-pox." It is said that there are 130 children in the institution in which this remedy is used as a substitute for vaccination, and that no case of small-pox has appeared among these inmates. The combination prescribed can have no possible specific action, and by its employment there is a grave possibility of the disease attaining wide prevalence. It is the concensus of opinion of leading medical authorities all over the world, that successful vaccination is the one means of rendering patients immune to small-pox; that prophylactic doses of antitoxic serum will render subjects immune to diphtheria, and that we know of no specific for the prevention of scarlet fever. With these facts in view the publication of an article of this type in the newspapers does a great amount of harm. The laity seem to grasp with avidity any means other than the proper one for the prevention of small-pox. The ravages of an epidemic of this disease are too dreadful to contemplate. Substitution of this inert combination for rational scientific treatment is to be deplored. Universal vaccination, and compulsory vaccination, must be insisted upon, and physicians generally would do work of great missionary value if they placed these facts clearly before their patients.

Foreign Body in the Ear.—Almost any object can be removed by syringing. A strong piston syringe is often required, but a high grade bulb syringe may answer. In obstinate cases put the canal on a stretch by pulling the ear firmly upward and outward while the stream is being forcibly injected. (Surgical suggestions, *Medical Record*, October 12, 1901).

Original Articles.

TYPHOID FEVER.

By WM. A. DICKEY, A. M., M. D.,

Toledo, Ohio.

Professor of Principles and Practice of Medicine and Clinical Medicine, Toledo Medical College; Attending Physician St Vincent Hospital; Member of the American Medical Association &c.

I consider myself greatly honored in being invited to read a paper before this Association, composed as it is of the representative and wideawake practitioners of this part of Ohio. In accepting the honor. I fully appreciate the responsibility, for I shall possibly have little to offer that you do not already know. Notwithstanding this fact, I congratulate you upon the subject assigned me, for a discussion of typhoid fever is always interesting and profitable, because it forms so large a share of the work of the general practitioner and by reason, too, of its protean nature. I think we can refresh our minds better and have a more comprehensive idea of this disease if we examine somewhat in detail its complex parts.

Etiology.—That the bacillus of Eberth is the cause of typhoid fever can no longer be doubted: lowered vital resistance brought about in any manner is a contributing factor of much potency. By a majority of investigators, this bacillus is said to conform to but two of Koch's laws, viz. (*a*) it is always present in the disease; (*b*) it grows outside the body in typical form. The third, the production of the disease by inoculation with the typhoid germ has not been fully proven, although Horton-Smith in his recent lectures delivered before the Royal College of Physicians of London adduced proof to show that it could be communicated to the lower animals by means of the typhoid bacillus.

Sources of the Poison.—The sources of the poison named in order of importance are (*a*) feces, (*b*) urine, (*c*) and expectoration. During the latter part of the first week and the second and third there is no doubt but the feces contain the germs in large numbers; later they are not so numerous. The stools, then, during the period I have indicated, are highly dangerous and should be thoroughly mixed with some germicide before being thrown out. How long they remain a source of danger it is impossible to tell. The urine will often contain the micro-organisms in such quantities as to render the urine turbid. Their appearance in the urine occurs later than in the feces, and is as great a source of danger. They are to be found in about twenty-five per cent. of all cases. While they can at times be found in the expectoration, they are not so numerous, hence not so dangerous, but they may cling to the thermometer and hands and in this way spread the disease.

Means of Infection.—The commonest means of infection are through water and milk. The milk is tainted by directly pouring polluted water into it, or by washing the cans or bottles in which it is kept with impure water. That this is directly responsible for hundreds of outbreaks cannot be denied. Proof is wanting that the bacilli multiply outside the body, and yet it has always seemed passing strange to me that the stools from a single patient should pollute a stream to such an extent that a great number of individuals drinking the water would become infected with the germs and have the disease unless multiplication took place. The toxins of the bacillus are contained within the germ itself and are, for the most part, liberated when the bacillus is killed or destroyed. It follows then that in those cases marked by great prostration, the germs have been taken into the system in large numbers, or they have been markedly toxic, or the individual has had little resisting power. As intimated before, the influence of other germs must not be lost sight of.

In military camps flies are beyond question the frequent carriers of the poison. This was certainly proven and demonstrated during the Spanish-American war. That dust may be the means of carrying the germs, I think there is no doubt, and is always to be thought of about army posts or where large bodies of men congregate without adequate means of protection.

The possibility of direct contagion from person to person must be acknowledged, though as a matter of fact is seldom seen. The fetus may receive the poison from the mother as has been proven by finding the micro-organisms in the heart and spleen. It is gravely doubtful if the germs can be found in the mother's milk.

The bacillus is very resistant not only to freezing and thawing, but in the dry state when found in the earth or in clothing. It need hardly be said that children take the disease in the same manner that adults do.

Symptoms.—A great clinical teacher and author says: "Clinically the disease is marked by fever, a rose-colored eruption, diarrhea, abdominal tenderness, tympanites, and enlargement of the spleen; but these are extremely inconstant and even the fever varies in its character."

Temperature.—As a rule we have a decided increase of bodily temperature, though there are very many and important exceptions. The reasons for this are numerous. The degree of virulence, the amount of the poison and the individual resistance must all be taken into account. Then, again, the amount of toxins absorbed from what may be termed the non-pathogenic bacteria in the alimentary canal, constituting mixed infection, may be of sufficient intensity to materially increase the fever or conjointly with the typhoid micro-organisms be of such a nature as to completely overwhelm the patient and the temperature be low; so that in the most malignant forms we may have but little fever. A low type of fever then may mean as serious a form of the disease as a high one, and be as dangerous to life. I have had patients, and I am sure you have also, both in hospital and private practice, with bad cerebral symptoms, low, muttering delirium, subsultus-tendinum, etc., lasting days together with a temperature but litle above 101 degrees. This low temperature was the result of what might be termed septicemia or sepsis.

* Read before the North-Central Ohio Medical Society, at Marion Ohio, Sept 27th 1901.

Complications will modify the temperature greatly. At one time it was supposed that the typhoid bacillus was incapable of producing suppuration and that when it did occur it was the result of pyogenic organisms; while this, possibly, is usually true, it is not always so, as the experiments of Dmochowski and Janowski have amply proven. They found the micro-organism in pure culture in bone suppuration. Otitis-media is relatively common in children as a complication and very materially changes the temperature range. Malaria may be a factor of considerable importance and is always to be thought of when a sharp increase of temperature occurs preceded or not with a chill. That we can have a dual infection, that is, with the typhoid and malarial parasite, can, I think, no longer be questioned. Gillman Thompson, of New York, and others found the plasmodium in undoubted cases of typhoid fever in soldiers returning from Cuba during the late war with Spain. Pneumonia, insidous or otherwise, is found at times and will very materially increase the temperature. Disorders of digestion are exceedingly liable to augment the fever, particularly if there is constipation: other causes will suggest themselves which we will not take time to mention. He who expects to find the classical temperature curve of Wunderlich in typhoid fever will more often be surprised by its absence than we would suppose, when reading about it in the text books.

Digestive Organs.—The lips, teeth and mouth are quite characteristic as a rule. The tongue at first moist, soon becomes dry, with an accumulation of epithelium in the centre, tip and edges red, or the whole organ red and glazed. There is no herpes as in pneumonia. The throat is at times exceedingly sore and covered with a thin membrane. During my term of service in St. Vincent's Hospital the past winter, a young man was admitted to the general ward who had been ill for two weeks and complained of nothing but the most intense sore throat and a pain in the nape of the neck. An examination of the throat revealed the tonsils and pharynx covered with a thin white membrane. Typhoid fever had not been suspected by any of the physicians who had seen him. The patient was much disgusted when informed he had typhoid fever. It proved to be a very rebellious case lasting about six weeks after admission. In this case the parotid glands were enlarged and tender in spite of the most vigilant care of the mouth and throat. One or both of these glands may suppurate. At the outset, particularly in children, there may be nausea and vomiting, so much so as to be misleading. When this is present it denotes serious toxemia. I have seen a case of this kind within the past few days. The appetite, as a rule, is entirely lost, but if the fever is not high, some food will be taken.

Diarrhea is a common symptom during some part of the disease. At times it will come on during the intitial period, at others not until much later. It is not by any means a constant symptom and may be present in only fifty per cent. of cases; in the others there will be constipation. During the early period it is catarrhal in character and is caused, no doubt, by the bacilli and their toxins. Later it is caused by the ulceration.

This leads me to speak of ulceration of the intestines as an essential feature of the malady. The time was, not yet very far removed, indeed, when there was believed to be ulceration in all cases. This position can no longer be maintained. Vallaird, of Paris, in 1890, read a paper before the "Society of Hospital Physicians," mentioning a case in which the bacillus typhosis and streptococci were present and yet no intestinal lesions were found. Banti has reported a case of enteric fever without the usual change in Peyers' glands but in which the bacillus of Eberth was found in the spleen and mesenteric glands. Adnot mentions a case of meningitis in which the typhoid bacillus was found but no intestinal lesions. Recently Osler reported a case in a boy in which there was no disturbance of Peyer's patches. In Johns Hopkins Bulletin for December, 1897, Flexner and Harris reported a case of enteric fever in a man a 68 years of age in which the bacilli were found in numerous organs but no intestinal lesions. Numerous other cases are reported, so that we can no longer look upon the disease as one affecting the alimentary canal only, but rather one of general character, a modified speticemia. Gurgling in the right iliac fossae, upon which some place so much stress is by no means constant or characteristic, as it may be found in other conditions or diseases. Tympanites is usually though not always present, and when marked constitutes a very troublesome condition and one difficult to remove. It is caused by (*a*) decomposition of food in the alimentary canal, (*b*) infiltration of the muscular tunics of the intestine, (*c*) paresis of the bowel, either as a result of lack of nervous tone or deep ulceration, (*d*) those in which we have marked peritonitis. Hemorrhages of greater or less intensity will at times occur and while not always fatal are certainly always serious and denote a case of great gravity. They do not occur as often in children as in grown persons.

The Circulation.—This at times is profoundly affected because of the deterioration of the myocardium brought about by the toxins of the bacilli and the high temperature. It is more marked in those in whom there has been antecedent heart trouble; in consumers of large quantities of alcoholic beverages and the like. We may have embolism and thrombosis. The pulse at the outset is full and strong, at times dicrotic and may correspond with the temperature and respiration, though it is usually slower. When it is weak and rapid it is a bad omen, and calls for prompt and energetic stimulation. I am in thorough accord with the statement of Tyson that a pulse of 140 if maintained is a bad omen. When weak, as I have indicated, the sounds are not distinct and a murmur can be heard at the apex. This weakened condition of the heart may remain far into convalescence (indeed may be permanent), and calls for prolonged rest in bed. I am sure we often allow our patients to get about too soon when this condition exists. Rest in bed for a considerable length of time will often ward off what would otherwise result in per-

manent crippling of the organ. The red blood cells are very much diminished, particularly after the first two weeks, when they fall rapidly up to the first week of convalescence. The amount of hemoglobin is also much reduced, more relatively, than the red blood cells.

The Spleen.—The spleen is enlarged and can usually, though not always, be felt by the end of the first week, to disappear as the fever subsides. Percussion will not reveal it as well as palpitation because the colon is often distended with gas; but if the legs are drawn well up over the abdomen and palpation carefully and gently made at the end of the expiration no difficulty will be experienced. In case of relapse the spleen will be enlarged as in the intial attack. In those cases marked by suddenness of onset and high fever, the spleen enlarges more rapidly than when the converse is true.

The Organs of Respiration.—The nasal mucous membrane becomes annoyingly dry at times, thinly incrusted, causing the patient to be well nigh constantly picking at the nose. Epistaxis is commonly though not always present. Sometimes it will be so trivial in character as to escape notice unless attention is particularly called to it. The throat will, in a limited number of cases, be exceedingly sore, with a thin exudate, as in the case mentioned in the early part of the paper. Catarrhal pharyngitis and laryngitis occur, together with that of the bronchi, causing more or less coughing. Pneumonia, hypostatic most frequently, will occur, particularly in the old and feeble, and where the heart is weak and the patient allowed to remain on the back for too long a period without change of position. Of course other forms of pneumonia will be met with, as well as pleurisy in rare cases. I saw a case of this kind in a young soldier returning from Cuba, in which there was effusion into both pleural cavities.

Urinary Organs.—I desire to emphasize the necessity of careful attention to the action of the kidneys. As a result of the toxemia, they are liable to functionate badly and thus constitute a source of great danger. The urine is scanty, high-colored, the specific gravity augmented because of increase of urea, diminished chlorides, albumen, particularly during the acme of the disease, tube casts, hyaline or finely granular in character and at times blood corpuscles. While albumen, tube casts and blood corpuscles are only found in the most severe forms of the disease, still the majority of the cases in which they occur recover. Bacilli are found in about twenty-five per cent. of cases, or one in four of all we will be called upon to treat. Horton-Smith, of London, and Richardson, of Boston, have directed attention to this fact, and each confirmed the observations of the other. It is rare to see them before the third week, although they may be found earlier, and may persist in the urine for years after recovery. The explanation of their appearance and persistence as given by Horton-Smith is a stray micro-organism getting into the bladder and the subsequent multiplication in the urine. Retention of urine is not common, but does occur when there is lack of muscular tone to the bladder or if there is coma. There may be pyuria.

The Skin.—The skin is hot and dry and by the end of the first week or the early part of the second a roseolous eruption makes its appearance which is characteristic of the disease. It is not always present, however, being absent in 20 or 25 per cent. of cases. It is usually found on the lower portion of the chest or on the abdomen, but may be on the back and legs, and often comes out in successive crops. These spots are unquestionably caused by the presence of the bacilli, though for a long time this was questioned. In 1886 Neuhaus found them in nine out of fifteen cases. In 1895 Thiemich found them in three out of seven cases examined, while in 1899 Neufeld found them in thirteen out of fourteen. Curschmann, of Leipsic, found them in fourteen out of twenty cases, while more recently still, Richardson, of Boston, has been equally fortunate. The spots are not seen so frequently during a relapse, as they are in the initial attack. In those cases marked by much perspiration we may have sudamina as a result. The dry skin is the rule and, because of this, skin eruptions that were present before the attack will disappear.

Nervous System.—Headache of greater or less severity is complained of in the greater proportion of cases; ringing in the ears, slight deafness, delirium, usally of a low muttering character, at times wild, subsultus tendinum and carphologia, are all to be seen; yet many cases will occur in which all of them will be absent, unless it should be slight headache. Carphologia was at one time, and is yet by many, regarded as a very bad symptom, and yet I am not sure that is any worse than others that are constantly seen. In children grinding of the teeth, accompanied at times with an outcry, will be noticed. This outcry does not mean, of a necessity, meningitis. While meningitis does occur in typhoid fever, it is exceedingly rare. Neuritis is to be seen and is very painful. Multiple neuritis is rare, but when it occurs very troublesome and lasts for months and sometimes for years. Osler found it four times in 389 cases. Its resemblance to chronic poliomyelitis anterior is so striking as to make a differential diagnosis extremely difficult. Indeed, I know of no way in which one can be positive. I have had one case involving both arms and legs that came on toward the end of a long and unusually malignant case, in which there was the same wasting of the thenar eminence, the muscles between the metacarpal bones, the shoulders, arms and legs, with paralysis of the extensor muscles of the feet, and at the expiration of two years the patient was still on crutches and unable to use the hands except for gross manipulation. Aphasia will occur in children.

Diagnosis.—The diagnosis of typhoid fever is not, at times, an easy task in the adult, and is much more difficult in the child. It is an extremely rare thing to find the classical symptoms as laid down in the text-books, no matter whether we are called early or late. In the young it may set in abruptly with nausea and vomiting, with or without a chill, followed by high fever, headache and other nervous manifestations, or the fever may come on gradually,

as in the adult, or it may be irregular for a time. All of these you observe may be found in other diseases, such as la grippe or auto-intoxication from the alimentary canal. In short, there is not a single symptom that is constantly present. It is true that in those of mature age, it usually comes on gradually, with general feeling of malaise and some of the other symptoms with which all are so familiar, such as the slow pulse somewhat out of proportion to the height of the fever possibly, the characteristic tongue, enlarged spleen, roseolous rash, bleeding at the nose, ringing in the ears with slight deafness and diarrhea. Allow me to say here before proceeding to discuss the more positive methods of diagnosis, that in my opinion, any continued fever, lasting six or seven days uninfluenced by quinine is typhoid fever. Our rural brother, far removed from the laboratory, must of a necessity depend upon his skill gained in actual practice at the bedside, hence days will often elapse before he can make a positive statement.

Widal Reaction.—As a more positive method of diagnosis we now have the Widal method of serodiagnosis, which is one of the great practical achievements of modern medicine and is beyond doubt of much diagnostic value. This, however, in justice to Pfeiffer should be called the "Pfeiffer method," as he was the first to call attention to it. It depends upon the now well-known fact that the bacilli lose their motility and clump togther when brought in contact with the blood, dried or not, or blood serum of one who is suffering from typhoid fever. Widal made a positive diagnosis in 500 cases without a single mistake. Others are not so fortunate but place positive results in 95 per cent. to 97 per cent.

The reliability of the test depends somewhat upon the amount of dilution. At first it was proposed to make it 1 to 10. This was considered too low, and as a result the dilution has been raised. For all practical purposes 1 to 20 gives the most satisfactory results with a time limit of one hour. This agglutination, says Horton-Smith, is "a reaction of infection." The change is most marked about the tenth day.

Ehrlich's diazo reaction is of value, but less so than Pfeiffer's, because it will occur in other conditions, such as acute miliary tuberculosis and at times in cases with high temperature from other causes; still it is of great value and can often be seen before the appearance of the rash. Osler found it in twenty-two out of twenty-six cases.

Prognosis.—It is extremely difficult to interpret aright the language of figures as applied to the treatment of disease, even though given by the most careful and conscientious observer. Epidemics vary so much in severity; then, too, age, personal environment, amount of the poison taken into the system, as well as its virulence, the amount of infection by other germs, and individual vulnerability, are all factors that must be reckoned with and yet are difficult to estimate. French and German statistics in 1866 showed a death rate of 18 to 20 per cent.; now in America it is 7 to 8 per cent. Certainly a most creditable showing for American medicine. It must be acknowledged however, that since the institution of the Brand bath, or some of its modifications the mortality has been materially lessened. The rigid adherents to the Brand method claim the best results. I am not sure but the pendulum has swung somewhat to the other side of the arc and that it is not always followed as closely as hitherto and possibly with as good results. To particularize as to unfavorable symptoms, I might mention a weak, irregular heart, persistently near 140, with diminished or inaudible first sound, and continuous high temperature, together with alcoholism, profuse and repeated hemorrhages, serious involvement of the nervous system and pronounced diarrhea.

Treatment.—Upon the threshold of this discussion we are confronted with questions which, if they can be correctly answered, will help us greatly. To what are the symptoms in a given case due? To the cause of the disease, to complications, or to both combined? This being answered, we can go a step further and ask ourselves what can we do to relieve the symptoms present and at the same time conserve the strength of the patient. For be it understood that that physician will have the best success who treats the patient and not the disease. We have no specific for typhoid fever; in the very nature of things we cannot have, neither do I believe we can abort the disease in the sense in which that terms is used.

When called to see a case of typhoid fever, my invariable rule is to give a sufficient amount of mild chloride of mercury to move the bowels well. I usually give one grain hourly in conjunction with two or three grains of subnitrate of bismuth, until the bowels commence to move from its influence, when it is stopped and not given again. I think this has a salutary influence. I do not believe it possible to render the alimentary canal aseptic, but surely you can come as near doing it with this as with any other remedy. If thought preferable a single large dose of five or ten grains in capsules can be given and followed by a saline; some prefer this method. If after this it is thought best to give a cathartic I use Hunyadi water or sulphate of magnesia. I have said I do not think it possible to render the alimentary canal aseptic. I am constrained to believe that what might be termed the specific method of treatment, such as was remommended by the late Dr. Woodbridge, and is still followed by some, is gradually being abandoned. Woodbridge himself gave it a death blow as a distinctive treatment in the cases he had charge of during the war with Spain, the results being no better, if as good, than other forms tried. Indeed, our French confrères with whom it originated are gradually getting away from it. The eliminative treatment of Thistle has its advocates, but I am sure the continued use of cathartics in any form is to be deprecated. True, the bowels should not be allowed to become constipated or inactive—though this will sometimes occur as the result of conditions beyond our control—because the temperature will almost surely be increased. In these cases rectal injections of warm salt water are much to be preferred. After the bowels have been well emptied in the manner I have indicated, the remedies to be employed will depend upon the symptoms present in the concrete

case. If the discharges smell badly or the diarrhea needs restraining, or if neither be present salol, beta-napthol and bismuthi salicylate can be used to advantage in doses ranging from five to eight grains, in capsule, other remedies of a similar character will suggest themselves. When the tongue is slightly red, with a tendency to dryness, dilute hydrochloric acid in small doses will be found beneficial.

When the heart shows the least suspicion of flagging, stimulation must be resorted to. Of all the remedies spoken of in this connection, strychnine takes first rank and when possible should be administered subcutaneously. I am persuaded that the dose, as usually given, is entirely too small unless repeated at short intervals. I never think of giving less than one-twentieth of a grain and more often one-fifteenth once it four or five hours, until the desired result is obtained, when the interval is lengthened. In a recent editorial by Dr. Tyson, in **The Therapeutic Monthly,** on this subject, he says that the stimulating effect of one-fortieth of a grain of strychnine will last for two hours and suggests that it be given in this size dose, at that interval, and subsutaneously. It is not always convenient for this to be done, because all cases can not be furnished with a trained nurse, and the physician could hardly be expected to carry it out. Still the suggestion is a valuable one. Caffeine alone or combined with camphor, is a most excellent cardiac stimulant. Alcohol in some form can be given when necessary, but the routine administration of whisky, as was once so much in vogue, is not to be thought of. Digitalis can be given, but its action is a little slow. The dose for an adult should be from ten to twenty drops. Strophanthus is a remedy of much potency.

When a hemorrhage occurs, opium to stop peristaltic action of the intestine, the ice bag to the right iliac fossae, as well as pellets by the mouth will be appropriate treatment. Ergot may be administered, whether to any advantage is another question. Should perforation occur the aid of the surgeon must be invoked.

If there is inability to sleep, accompanied with excitement, bromide of soda, and if the action of the heart does not contraindicate it, hydrate of choral can be used. Trional and paraldehyde are good. Should the head be hot the ice-cap will be markedly serviceable.

How shall we treat the fever? The number of so-called anti-pyretic drugs in the market are well nigh legion, but the judicious practitioner will shun them in this affection, and, in fact, in all diseases of a specific character, in which there is marked toxicity. They are dangerous and have no influence whatever upon the course of the disease.

Water at varying temperature is the safest and best; it is always within our control, is always at hand. It can be used as a full bath, pack or sponge or if you please a lump of ice. For our rural brother the full bath is often out of the question. He must rely on the cold pack, sponge or lump of ice. Cold water dissipates heat, allays restlessness, produces sleep, tones up the nervous and muscular system and increases the action of the kidneys. I have had patients markedly delirious, tossing wildly from side to side, become quiet and sleep soundly, until the temperature would mount high again, by being continuously rubbed with a lump of ice. The bath should be used when the temperature goes above 102½ degrees or reaches 103. Cold is not always indicated, indeed may be harmful. If there is hemorrhage, peritonitis or in the greatly enfeebled, it should not be used.

I am aware that in certain quarters there is a belief that high temperature has a salutary influence by reason of its so-called phagocytic action upon the bacteria producing the disease. It would be extremely unbecoming in me to say that it was not true, where so many hold to the belief, whose shoes I am in no wise worthy to unloose, but with great modesty I say I doubt it. I believe there is a rapid oxidation and disintegration of tissue hurtful to the patient which it is the duty of the physician to counteract.

The lips, teeth, tongue and entire buccal cavity should be kept thoroughly clean; when this is neglected otitis media is extremely liable to occur. Because of the deleterious action of the toxins of the bacillus on the kidneys, causitg them to functionate badly, the patient should be given an abundance of pure cold water, and if too somnolent to ask for it, it should be given him with as much regularity as the medicine.

The patient should have liquid food, of which milk is the best, and yet it may cause mischief. It will often have to be diluted and when it does I prefer vichy to any other diluent. Beef-juice can be used for a time—when it does not increase the diarrhea—should the patient tire of the milk; a pinch of salt added to the milk will render it much more palatable to many. The liquid diet should continue for at least ten days after the fever has reached the normal point. We can then give a soft boiled or poached egg, rice and the like.

HYSTERICAL PAIN AND STATIC ELECTRICITY.

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Pain, anesthesia and paralysis constitute the well known tripod of grave hyterical symptomatology. All three symptoms have been, after many vicissitudes, referred to disorders of the brain. But it is only in the last thee or four years, that the French neurologist Sollier has formulated a theory of this cerebral disorder with the most seductive precision. According to Sollier, anesthesia is not to be regarded simply as one of the phenomena of hysteria, but as the fundamental condition upon which all the phenomena of hysteria depend. The commonly described cutaneous and muscular anesthesias are not the essence of the case, but only the expression of a profound central anesthesia, a benumbing of the sensibility of the brain cortex in whole or in part, with consequent paralysis of its function. Localized cerebral anesthesias give rise to localized symptoms on the periphery anesthesia or paralysis, where the central loss of function is complete; to pains, often of exquisite intensity, where this anesthesia is incomplete or is passing away. As a con-

verse of this proposition. Sollier claims to have discovered on the skulls of hysterics, at places corresponding to nerve centres for different parts of the body, points of pain, which perists so long as the peripheric anesthesia persists and pass with it. The most curious part of this discovery relates to the viscera. Sollier declares himself able, without hypnosis, but by simple reiterated injunction, to hysterical subjects, to render any given part of the body anesthetic, even the gastric mucosa, the heart, lungs, bladder, intestine. The induction of such anesthesia is accomplished by various forms of distress. I will quote the words of the author himself:—

"Having assured myself that Alice was in her normal condition of sensibility, and that she had no painful point in her head, I put her to sleep, and then ordered her to feel her right arm less and less, from the end of the fingers to the elbows. Soon she has an absolute anesthesia and complete flaccid paralysis of the limb. I then examine the head, and find a point of hyperesthesia at the upper third of the fissure of Rolando, very marked on the left side, (thus corresponding to the right arm,) very slight on the right. Then I order her to recover her sensibility, and when this is restored, the painful points have entirely disappeared.

Another day, on another similar patient, I perform a similar experiment, localizing the anesthesia in the left hand. When the anesthesia was complete, I found a painful point situated exactly at the middle part of the right fissure of Rolando, in the region corresponding to the centre of the arm. The point disappeared when the sensibility of the hand returned. There was thus evidently a crossing between the hyper-anesthetic point on the skull and the anesthetised organ, and as this point was situated exactly at the level of the cerebral centre corresponding to the anesthetical limb,—it is logical to admit that the phenomena which determine either the anesthesia or the return of the sensibility, take place in the cortical centre itself.

Again, in cases of primary anorexia, where the stomach is the unique or the primary organ involved, one may nearly always observe a hyperalgia of the parietal region of the skull,—principally on the left side, but sometimes on both sides of the sagital suture according to the extent of the case.

The anesthesia of the heart is accompanied by an extreme anguish, with a pulse of 88,—prolonged arrests of respiration, almost loss of consciousness and impossibility of speaking. A single point of hyperesthesia appeared on the median line of the skull at the anterior region of the superior parietal lobule."

This observation had not been made before. In patients whose anesthesia was passing away, Sollier frequently observed violent pains in the region previously insensible,—these lasting until the peripheric sensibility was completely restored. This combination of pain and anesthesia, is of course the functional imitation of the painful paraplegias of motion and sensation which are common in organic lesions of the spinal cord.

According to these facts therefore, hysterical pains imply a partial benumbing of cerebral centres: hysterical anesthesia, a complete loss of function of the same parts,—a paralysis. A circumstance of practical value in this connection is, that with hysterical, i. e. cerebral pains, pressure on the affected locality is not painful,—but rather affords relief,—whereas in either neuralgic or inflammatory pain, pressure is intolerable. Pain reflected from a distant focus of irritation, which is such a common type of pain of pelvic origin, seems to me to sometimes follow one law and sometimes the other. But a local pain which is not aggravated by pressure, can almost certainly be referred to the brain, constitutes indeed the so-called imaginary or subjective pain,—which is often allowed so unfortunately to simulate organic disease, especially utero-ovarian disease.

The difference between the pain with or without anesthesia,—or anesthesia with or without pain, is not fundamental,—but according to these luminous experiments of Sollier, depends upon the varying degree of fundamental brain exhaustion. In emerging from an anesthesia, the patients who did not complain of violent pains, nevertheless always complained of prickling, crackling, etc. The phenomenon strikingly recalls the peculiar sensations experienced in an arm which, as the saying is, has "fallen asleep" under pressure,—only in this case, it is the brain centre which has fallen asleep and is strugling to awake.

Again, on this theory it can be seen why the treatment of neurotic pain and anesthesia should be identical. Both require that a powerful stimulus should be directed to the benumbed cerebral centres: and the use of anodynes is as unreasonable for the relief of pain as it would be in the treatment of sensory paralysis, where no one would think of applying it. I think this unification of the etiology and indications for treatment, in so large a class of clinical phenomena is extremely helpful.

Deep mystery shrouds the molecular processes in the nerve tissues which result in so many marvelous and varied phenomena of life and thought,—but at least this seems almost certain, that the elementary process is some form of molecular movement transmitted along nerve fibres, and which is disarranged, perhaps arrested in disease. Grasping this conception, it seems almost like going without saying that the great resource at our disposal for exciting molecular movements in living tissues,—electricity, should be *the* remedy for hysterical brain exhaustion. The effect of massive movements,—blows, falls and the like, in inducing hysteria of various forms, is very marked. The most perfect case of hysterical hemianesthesia I have seen, was in a young woman actress who, during a theatrical performance, had been thrown to the ground from a considerable height by the breaking of a piece of machinery. As she did not break any bones, it was difficult to persuade any enlightened jury that she had really sustained any injury, or was entitled to any damages, although half of her brain was evidently paralyzed. This according to the usual law, that under the same traumatism sensory functions may be abolished, while motor functions remain intact. This is shown by the early appearance of tactile anesthesias in various forms of myelitis,—and

while as yet there is no indication of motor paralysis, although the motor centres are involved in the same lesion to which the sensory paralysis is due. In the brain, the coalescence, which is to-day admitted of sensory and motor centres, renders still more remarkable the frequent escape of motor functions in a catastrophe which has caused profound sensory disturbance. But the fact is indubitable.

The effect of the ordinary faradic current upon hysterical anesthesias has long been known,—certainly from the time of Duchenne. This great clinician recognized the special value of a certain form of the current in sensory disturbances,—that is the current given by the secondary coil. But he did not recognize that this value depended on the high tension and low voltage of a current transmitted by a very long and thin wire,—which opposes a great resistance to the passage of the electricity. This, he pointed out, was capable of greatly diminishing the sensibility of a living tissue to which it is applied. This power seems to increase with increase in the frequency of the interruptions of the current, and also with increase in its tension. I think it must be that under those circumstances, molecular vibrations are transmitted over the entire nerve tracts from the periphery to the brain, and penetrate to its benumbed centres, arousing them in a special manner.

The inferences from Duchenne's statement do not seem for many years to have been followed out,—and I think it was not until ten years ago, that Lapthorn Smith of Montreal made practical clinical application of Duchenne's law, and used bipolar electrodes, supplied by a coil of very long, thin wire, in the treatment of pelvic pains due to utero-ovarian disease. Much more recently, the elaborate scientific reasearches of Tesla and d'Arsouval have greatly enlarged the horizon of therapeutic possibilities for alternate electric currents of high potentiality and great frequency. With these I have no personal experience, and *a priori* cannot refrain from dreading a current said to be innocuous, when an almost incredible frequency of interruptions is secured, but admitted to be extremely dangerous, should this be somewhat diminished.

My only experience is limited to the use of a coil of fine wire, No. 34, with a length of 4500 feet. This is very much less than the coils used by Engelman, who has 6000 or 9000 feet,—nevertheless, I have obtained positive results in the relief of pain, in a considerable number of cases. I will briefly refer to a few of these.

CASE 1.—W. A girl of 24, who had been cured by another physician of an endometritis with retroflexion and attendant dysmenorrhea after prolonged treatment extending over the greater part of four years, but who remained with a fixed pain in the abdomen on the median line, which greatly preoccupied and demoralized her. This pain was entirely removed by an application of the high tension faradic electricity directly to the seat of the pain. The relief persisted for two or three days,—being the first relief experienced for several months. Then the pain returned, and was again dissipated in a similar manner, and the experience was repeated several times. The summer vacation interrupted the treatment but during the summer this particular symptom gradually subsided, and although replaced by others which required other and vigorous treatment, this did not return.

CASE 2.—C. Widow woman, underfed and overworked, affected with a neuritis with fixation of the left shoulder joint, and apparent retraction of the tissues of the axilla. This treated from November to January, by the constant current through the articulation. Very little effect. On January 3d, after the galvanic application, the high tension faradic current was passed from the axilla to the acromion process, where existed a point of exquisite sensitiveness. The application was repeated daily, and on January 14th patient reported that she had worked all day long at house cleaning with little difficulty, and only some pain. Repeated the galvanic current with anode upon painful point—then high tension current. Repeated treatment for three days, then interrupted. There was always excessive sensitiveness to galvanic current, except with unipolar method, cathode in right hand, and anode on shoulder. The high tension current at first was intolerable, but after a few seconds was well tolerated. On January 22 found absence of pain or tenderness on pressure, even at point where subjective pain alleged; and patch of complete tractile anesthesia over lower half of deltoid. On this day high tension current alone, then this daily, and on February 1st, reported very little pain. On the 8th, though electricity omitted for five days, patient remained comfortable. On the 23d the passive motions which had been performed daily, coinciding with the electrical treatment used, became almost free. On the 26th gave the ordinary faradic current instead of the high tension current, and so as to make the muscles of the arm contract. The application was followed by a return of pain to the acromial point, so the high tension current was resumed on the 28th. This was always very painful for a few seconds, but ended by entirely removing the pain. By the middle of March was able to pass ten days in comparative comfort without electrical treatment. The latter was gradually discontinued, and the patient correlatively resumed her hard work, recovering the freedom and use of her arm.

As the case lasted from November till March, the cure can not be called prompt. But the pain and disability had lasted without change for two months, before the high tension electrical treatment was begun, while after this, every application was followed by distinct relief, and in two months by recovery. It is a question suggested by the patch of anesthesia, whether in this case there was an admixture of a distinct hysterical element with the neuritis.

CASE 3.—B. Outbreak of lumbo-abdominal neuralgia, promptly dissipated by a single application of the high tension current. Patient remarked, "This goes exactly to the right place."

CASE 4.—K. Neurasthenia with dorsal hyperesthesia, quite relieved by the high tension current. Whereas ten days later, the static electricity to the back only relieves for a very short time.

CASE 5.—B. Widow, second marriage, and miscarriage in that 8 months before consultation. Since then excessively nervous, with burning pain at precordia and under left breast, always exasperated by nervous excitement. No local disease discoverable in pelvis or elsewhere. Pain always relieved for an hour or two by the high tension current passed from precordia to spine, along the track of the 5th intercostal nerve.

The patient was severely hysterical, and had been ridiculously frightened by physicians about her heart. The cardiac neurosis was always at its maximum during the premenstrual week, and at this time the uterine cervix was deeply violet from congestion. The attendance of the patient was so irregular, that no permanent benefit could be secured from electrical, or indeed any other treatment.

In the other cases in my list, the pains were pelvic, either associated or not with some utero-ovarian lesion, and dysmenorrhea.

CASE 6.—B. Ovary and tube prolapsed, but rose into place after five minutes application of the high tension current.

CASE 7.—Mc. Retroflexion of the uterus, corrected by inflated pessary, but delayed menstruation with much pain in breasts. The latter quite relieved by intra-uterine application of high tension current, and the subsequent menstruation was hardly painful.

CASE 8.—M. Partial retroversion of the uterus, abdominal pains, and extreme sensitiveness of fundal endometrum. Pains quite dissipated by intra-uterine high tension faradization.

CASE 9.—A. Ovarian congestion in course of at-

tack of material infection, which itself was treated by Warburg's tincture. High tension current to the swollen ovaries removed the sensitiveness first on one side, then on the other. A few days later, the sensitiveness returned, and was again removed by an electrical application, and the next morning the patient woke up feeling perfectly well. After a fortnight all sensitiveness had disappeared from the vaginal culs de sac, and neither ovary was perceptible.

CASES 10, 11 and 12.—N., Sch. and B. Cases of dysmenorrhea, quite relieved by intra-uterine bipolar high tension electricity, administered during one month or the premenstrual week.

CASES 13, 14, 15:—H., C., T. Pains in middle of hypogastrium or in right side in track of ileo-abdominal nerve, quite relieved by bipolar vaginal high tension current.

CASES 16 17.—Br., Gol. Overy or tube swollen and sensitive, and both symptoms always relieved promptly by the electrical application. Relief persisted for several days.

CASE 18.—K. Anemic girl with backache and slight uterine catarrh, with abrasion of uterine cervix. Bipolar vaginal faradization quite removed backache.

CASE 19.—Ag. Constitutional hysteric. Liable to dragging pains in ileo-inguinal nerves, brought on by walking even short distances. On this account had inferred the existence of uterine disease, which certainly did not exist, although a sharp pain was elicited by pressure upon supra-vaginal portion of uterine cervix. These pains were completely relieved by bipolar faradization.

The most striking anodyne effects that I have secured from the current, have unquestionably been with the pains of pelvic neuralgias, unassociated with gross lesion of the uterus or ovaries. After these, the effect of intra-uterine treatment in the relief of dysmenorrhea, I have found as remarkable as Lapthorn Smith asserted ten years ago. It is not invariably secured, however, certainly not with a single month treatment,—and I had one most annoying failure recently, with a patient whose nervous dysmenorrhea had lasted all her life, and who had been subjected in vain to much treatment. In superficial pains due either to hysteria or neurasthenia, in any part of the body,—the analgetic effect of the fine wire high tension current can usually be relied upon with confidence. But in more profound hysterical pains, as in the case of severe cardiac neurosis, mentioned above,—the treatment must be repeated incessantly and for some time to be effective. The one case of distinct neuritis on my list was one of the most successful,—showing that the efficacy of the current is not limited to nervous affections without tangible lesion. The marked effect of the current in, at least temporarily, diminishing swelling of the ovaries, and remedying their prolapse, implies, I think, that it greatly stimulates the vasomotor nerves, and thus contracts paralyzed blood vessels. Probably it is in this way that the current is beneficial in neuritis, where it may advantageously be combined with galvanism.

I do not think that I have attained the maximum benefit possible by the coil I have used. But I am fully prepared to confirm the observation of Dr. Kellogg, "that the lives of thousands of women are rendered miserable by a multitude of painful and neurasthenic symptoms, and who are perpetually under treatment for some imaginary prolapsus or anteversion, or ovarian irritation, or other pathological myth, and that these symptoms may be relieved by the fine wire faradization which acts as a local stimulant,—possibly increasing the activity of the trophic nerves, as claimed by Lapthorne Smith:—

"This remarkable power," continues the author quoted, "possessed by the faradic current of tension to relieve and even remove neuralgic pain, has been denied by some, and doubted by many, but for me there is nothing more certain."

It is interesting to compare the effects of the fine wire faradic current with those of galvanism, or of the static electricity, the latter especially in the form of the Morton Wave current. At one time I hoped great results from the unipolar method of applying galvanism, but have been very much disappointed in it. The effect of static electricity, on the contrtary, has seemed to be closely comparable with that of the fine wire current,—especially in hysterical pain. Hysterical pain is of cerebral origin:—and I think that electrical impacts of great frequency and high tension, whether from the spark, static induced current, or from the fine wire coil, are transmitted directly to the cerebral centre in special relation with the area of pain. According to Sollier, hysterical pains at the periphery indicate that some area in the brain which had previously been benumbed, is being aroused and quickened, while its nutrition is still greatly below par. A powerful stimulus, transmitted directly along centripetal nerve tracts, may be supposed to accelerate the molecular movements which result in improved tissue nutrition.

Besides this fundamental action, there is probably a local stimulus to vaso nerves,—tending to reduce local hyperasthenias. This action is valuable in the treatment of neuritis,—and especially in the vasomotor paralyses which cause swelling of the ovaries,—or which, even without tangible ovarian lesion, are probably responsible for much vague pelvic pains,—or pains reflected in the so called lumbo-abdominal neuralgias.

The question naturally suggests itself. Now permanent was the relief afforded by this electrical application In the cases of dysmenorrhea, the relief once obtained usually lasted for several months after cessation of the treatment, and how much longer I do not know, as I lost sight of the patients. In other cases, it was necessary to repeat the treatment at short intervals for a longer or shorter period of time. But by the theory of the case,—the electricity was being directed, not only against the symptom pain, but against the benumbed and torpid or exhausted condition of the cerebral centres upon which that symptom depended. Its stimulus, combined with other forms of appropriate nutritive stimulation, tends to restore these cerebral centres to their normal activity.

I am aware that in the foregoing consideration, I have offered nothing essentially new,—but have only brought forward a small contribution of further illustrative cases, in confirmation of therapeutic claims already advanced, but still often disputed.

Kerosene Frictions for Alopecia Areata.—Hallopeau (*Annales de Dermatologie*, July, 1901). A young woman who had had rebellious alopecia for more than a year, was practically cured by washing the head twice a day with soap and then rubbing kerosene vigorously into the bald patches. They soon became covered with soft hairs which, by the end of eight months, had almost been transformed into adult hairs. These results are not in accord with those of other observers, who have found this method quite useless.

A NOTE ON THE TREATMENT OF DIPHTHERIA.

By JOHN M. SWAN, M. D.,
of Philadelphia.

[Read October 9, 1901.]

In 1898, I read a report of "Five Cases of Diphtheria"[1] before this Society, and I now wish to supplement this report by recording my experiences in two house-epidemics of diphtheria.

The House of the Holy Child is a home for colored children, in which, on September 25, 1900, there were 32 people, children and adults. On that day I found one of the children, a girl, aged 6 years, suffering from sore throat. I immediately, as is my custom in all cases of sore throat, made an inoculation and sent the tube to the Bacteriological Laboratory of the Board of Health. The next day, September 26, I received a report from the laboratory that the culture contained diphtheria bacilli. On September 27 I made cultures from all the other people in the house, and on the 28th I received a report that three of the cultures were positive and two were doubtful. On the same evening one of the children in whom the culture was positive was taken sick and had membrane in the throat. The other two children had no membrane at any time, and, on second culture, the two doubtful cases were found to be free from the bacillus of diphtheria.

In the meantime the child who was first taken sick received 2,000 units of the Board of Health antidiphtheritic serum. As soon as the second child presented membrane she was given a similar dose of antidiphtheritic serum. The children who gave positive cultures without symptoms, as well as the two children in whom the cultures were reported doubtful, received 500 units of antidiphtheritc serum each.

The two children who presented membrane were isolated in one room, while the two children in whom there were doubtful cultures and the two in whom there were positive cultures were isolated in a second room. The membrane disappeared from the thoat of the first child taken sick in four days, and from the throat of the second child in three days. As soon as the membrane had disappeared from the throats of the patients I began to apply a 60-grain to the ounce solution of silver nitrate to the tonsils and the pharynx. The solution was applied after taking an inoculation; in 24 hours a second inoculation was made and the silver solution again applied. This system was continued until a negative culture was obtained, and then the child was bathed and allowed to return to those who had not been infected. All cultures were free by bacteriological examination on October 15, 20 days after the first case developed.

Out of these 32 people, therefore, I had two cases of clinical diphtheria, two cases of bacteriological diphtheria, and two doubtful cases. The two doubtful cases proved not to be diphtheria and the two bacteriological cases never became clinical cases. Furthermore, although the well children were retained in the home, being isolated, of course, from those sick or suspected, no case of diphtheria developed among them.

I believe that, owing to the fact that I made bacteriological examinations of all the inmates of the home and isolated at once all those who had bacilli in their throats, I was spared the spread of an epidemic of diphtheria among a class of children who have not the best resisting power. If I had merely isolated the first child who was taken sick, and not made a systematic investigation of all the throats in the home, I should ,probably, have had a succession of cases of diphtheria developing in the home all winter.

The child first taken ill attended one of the public schools of the city, and, I believe, contracted her sore throat from some child who had had a very mild attack of diphtheria which had been diagnosed tonsillitis, without bacteriological examination, and who was allowed to return to school with virulent bacilli in his throat.

In an article that appeared in the *Edinburgh Medical Journal*, June, 1900[2], Louis Cobbett advances the opinion that cases of diphtheria are propagated by mouth-to-mouth contact, and not through bad drains and unsanitary surroundings. In this way a child with diphtheria bacilli in his throat while playing at recess may laugh, shout, or cough in the face of some playmate, and thus spread the disease. Such a child may be a powerful factor in starting an epidemic, and each child that becomes infected may further spread the disease before he becomes ill enough to be kept home from school.

It would be an ideal state of affairs if it were possible for a school physician, as soon as he learns of a case of diphtheria in one of the children who attend the school of which he has charge, to make a culture from the throat of every child attending that school. Then every individual who has bacteriological diphtheria could be excluded from the school until such time, as his throat is free from the risk of transmitting the disease to his playmates. In this way epidemics of such severity that necessitate the closure of schools could be avoided.

In a second house-epidemic in which I had the management of the disease, an adult member of the family went to the northern part of the city to visit relatives. While away from home she had a sore throat. In a few days she was allowed to return home, where there were three young children. No bacteriological examination of the throat had been made, because the symptoms and clinical appearance were those of tonsillitis. In a few days after the return of this member of the family, one of the children, a girl, aged seven years, was taken sick with sore throat. Bacteriological examination of her throat as well as of the throats of the other children and the adults, including the aunt who had been away on a visit, showed diphtheria bacilli in all but one. Treatment with antidiphtheritic serum and nitrate of silver locally resulted in cure in 10 days. Of these cases two were bacteriological and three clinical.

In order that the applications of silver nitrate may produce the best results it is necessary that

1 Proceedings Philadelphia County Medical Society, 1898, vol. XIX, p. 187.

2 "Has Antitoxin Reduced the Death-rate from Diphtheria in Our Large Towns?"

they should be made very thoroughly, and that they should not be begun until after the membrane has entirely disappeared. I have never seen ill effects from the use of such strong solution, although in one of the cases at the home I was obliged to use the solution every day for 15 days before the cultures became sterile.

A FEW NOTES ON THE SALTS OF SULPHO-CARBOLIC ACID.

By EDGAR MOORE GREEN, A. M., M. D.,
of Easton Pa.

Abstract of Paper.

The sulphocarbolates are probably but little used by the profession and are said by the United States Dispensatory to be "inert." Sulphocarbolic acid itself the writer believes to be a valuable remedy in cases of nervous irritabity of the gastro-intestinal mucous membrane, especially when there is much tendency to fermentation. The sodium, ammonium and potassium salts of this acid have the additional advantage of also being able to correct the excessive acidity which usually exists in these cases, and they may be given in five to ten grain doses at intervals of two or three hours, though after meals and at bedtime is a particularly good way to administer these medicines. The sodium salt can with advantage be combined very frequently with the aromatic fluid extract of cascara sagrada. Sodium or ammonium sulphocarbolate is frequently used with advantage in two to five grain doses in pill form enteric coated. When used in this way the remedy reaches the intestine and corrects there the fermentation which is so frequently present in the relaxed condition of the bowels, especially in the aged. Cases were cited by the writer to show the good effects of these drugs used in this way. Another combination that has seemed to be a useful one is that of acetanilide and sodium sulphocarbolate. The presence of the sulphocarbolate in this combination renders the acetanilide more soluble and consequently more promptly effective in relieving headache or neuralgia. A five grain dose of a powder containing 50 per cent. of each of these drugs can be given at intervals of a half hour or hour in perfect safety, and in the hands of the writer has proved most effective for cases of this kind.

Sulphocarbolate of zinc has been so largely used by the profession as to hardly need any mention. It is particularly useful in cases of dysentery and diarrhea, and especially those of a chronic nature. In fact, it may almost be considered a specific in chronic intestinal catarrh and in those cases of diarrhea in which are watery stools and much flatulence. Cases were cited by the author to show the extreme usefulness of this drug.

DIPHTHERIA—ITS MANAGEMENT AND TREATMENT

By WILLIAM H. TERRELL, M. D.,
of Stilesville, Ind.

Diphtheria is an acute, infectious and contagious disease which begins as a local trouble and causes constitutional involvement by the absorption of toxines which are products of the bacterial growth.

Cause.—Diphtheria is caused by the colonization and growth of the Klebs-Loeffler bacillus upon some mucous surface. In nearly all cases the growth is located upon the mucous membrane of the upper respiratory tract—upon tonsils, palate, uvula, in the mouth, naries, pharynx or larynx. It may involve all these locations or only one or two of them.

While this bacillus is the direct or specific cause of the disease, there are other factors which enter into the causation or development of it, since every one who may chance to get a bacillus in his throat does not contract the disease. Age is an important factor in the causation, as persons under ten years of age are much more susceptible than older persons. The state of the general health, the condition of the mucous membrane of the upper air passages, and of the blood, may have something to do in determining the development of the disease. Atmospheric conditions seem to have something to do in its development, as it is more prevalent in damp cool weather. Some individuals appear to be naturally very susceptible, while others are immune. Difference in the virulency of the bacilli at different times causes the disease to be more readily acquired and causes a severer epidemic than when the bacilli are less virulent.

Dissemination.—The bacilli of diphtheria are single-celled microscopical plants and are disseminated very much as other plants or their seeds are. They may be carried by air, or they may adhere to the surface of the various objects, such as clothing, books, papers, hands, dogs, cats, flies, etc., especially if these objects come in contact with the exhaled air or the secretions from the mouth, nose and throat of a patient with the disease, and be thus carried to a fertile soil. The fertile, or natural soil for the development of the bacilli is an abnormal or unhealthy condition of the mucous membrane of the upper respiratory tract of a susceptible person.

Pathology.—The growth of the bacilli causes an inflammation of the parts upon which they are colonizing, and the formation of a grayish white deposit which forms a false membrane. Here the bacilli form, in their growth, a toxine which is absorbed by the blood and causes the constitutional symptoms. The bacilli are found at times, in limited numbers, in the blood and in the liver, spleen and other internal organs. Their presence in these locations is of little consequence, as they do not produce toxines or any pathological lesions in these places. The chief place, and probably the only place, of multiplication of the bacilli and the production of the toxine is in the tissues of the local lesion beneath the false membrane.

Variation.—There is a wide variation in diphtheria at different times and in different patients in regard to severity. Some cases are so mild that the patient may not appear to be sick at all, while some are very malignant. Some epidemics are severe, while others are characterized by mildness.

Investigation and bacteriological study have lead to the use of the terms true and false diphtheria. All cases which show the presence of the Klebs-Loeffler bacillus are true diphtheria. Infection with this bacillus is usually more severe and more highly contagious than infection with bacilli of false diphtheria, and is the only infection that gives rise to diphtheritic paralysis. False diphtheria includes

cases of infection of the upper respiratory tract with the streptococci and staphylococci, but the Klebs-Loeffler bacillus is absent. These cases are usually mild, except when they accompany scarlatina or some other infectious disease. But they very often simulate mild cases of true diphtheria so closely that, clinically, they cannot be differentiated.

Cases of mixed infection are cases of true diphtheria, but, also, have other bacteria accompanying the Klebs-Loeffler bacillus. These cases are just as dangerous as cases of pure infection, if not more so, and should be treated in every way as cases of pure infection. There is some variation of the disease according to the part involved with the local lesion. When the nose is involved, the disease is generally more severe than when only the tonsils and pharynx are involved. When the disease invades the larynx, it gives rise to croup and is the most dangerous form of diphtheria. Membraneous croup, I believe, in all instances, to be diphtheria and should be treated as such.

Diagnosis.—It would appear, from what was said as to the nature of the local lesion, that the diagnosis of diphtheria would be easy to make. But this is not always the case. Diphtheria is not the only disease that gives rise to a deposit upon the mucous membrane when it is inflamed. In false diphtheria, or infection with the staphylococci and streptococci, there is often a deposit or false membrane. In follicular, or lacunar tonsillitis, there is a deposit that, in some cases, simulates that of diphtheria very closely. In the great majority of cases there will be trouble in making the diagnosis from the clinical features. If the deposit is upon the walls of the pharynx, soft palate or uvula, and if the parts surrounding the deposit are red and swollen, and if, when the deposit is disturbed or loosened at its edge, there is hemorrhage, the case is evidently one of diphtheria, notwithstanding the constitutional symptoms may be mild. When the deposit is confined to the tonsils and with the constitutional symptoms mild or severe, if there are other well-marked cases in the family, or if there has been an exposure, the case should be diagnosed as diphtheria.

On the other hand, in a given case where there are no other cases of known diphtheria around and have not been for some time, with some deposit on the tonsils, the glands of the neck slightly swollen and constitutional symptoms moderately well marked, it will be difficult to make a positive diagnosis. These mild, doubtful cases should be managed as diphtheria until a more positive diagnosis can be made. All cases in which the larynx is involved primarily or becomes involved later, and croup is present, should be diagnosed and treated as diphtheria whether or not there is any deposit visible.

To make the diagnosis positive in doubtful cases of sore throat, a bacteriological examination should be made of cultures taken from the throat. In fact it is well to have a bacteriological examination made of all cases. For the past two years, I have been taking cultures of all my throat cases that in the least resembled diphtheria and had them examined bacteriologically. In most cases I had made the diagnosis positively from the clinical features before hearing the report of the bacteriologist. But I believe these bacteriological reports to be a benefit to one and make him a better diagnostician in this disease.

Complications and Sequelae.—Broncho-pneumonia is the principal complication, and one which causes a large share of the mortality in diphtheria. Diphtheritic paralysis is the main sequel. This may come up during the disease or may not show itself for some time after the patient is apparently well. This trouble may manifest itself in the paralysis of various groups of muscles and it may cause sudden death from paralysis of the heart muscle.

There is a tendency upon the part of the laity, in some places, to attribute this paralysis to the antitoxine where this remedy has been used. The antitoxine does not cause the paralysis, neither does it seem to prevent it, because it occurred just as frequently before the days of antitoxine, in proportion to the number getting well or living long enough to develop it, as it does now.

Preventive Treatment.—What are the physician's duties in trying to prevent the disease from attacking other members of the family and in the prevention of its general dissemination? He should give the patient, and parties concerned, information in regard to the dissemination of the disease and the best means of preventing the same. But it is not his duty to institute police duty to see that his instructions are carried out. The patient should be isolated, if possible, and no children should be allowed in the room with the patient. The room should be cleaned of all unnecessary furniture. All articles coming in contact with the patient ought to be burned or disinfected by boiling, if possible. If neither of these methods can be used, they should be immersed in a bichloric solution or disinfected with formaldehyde. The patient must not spit promiscuously about the room, but should spit on pieces of cloth or paper which should be immediately burned; or he should spit into the vessel containing a bichloride solution 1-1000. The sprinkling in the room of carbolic acid and other antiseptics that are bactericidal only in the liquid form is useless and deceptive. It is the duty of the physician, as soon as he suspects diphtheria, to report the case to the proper health officer.

The physician should take proper precautions by change of clothing, or other means, when visiting a patient who has diphtheria, to avoid carrying the disease to other persons. In order to do this he should wear an outer garment made of linen or other washable material, covering the entire body except the hands and face. On leaving the room this outer garment is to be removed and placed in a tight valise in which are kept pledgets of absorbent cotton saturated with formaldehyde solution. The hands and face should be washed in a bichloric solution. The patient should be detained at least a week or ten days after the membrane has all disappeared from his throat and after he is able to go about. But he is generally permitted to go about as soon as he is able. Herein lies the chief danger in spreading the disease, because the bacilli may remain in the throat, sometimes for weeks after the patient is apparently well.

The only sure means of preventing the disease is to administer immunizing doses of antitoxine. It

should be given in doses from 500 to 1000 units to parties exposed or liable to be exposed. The room or rooms in which the patient may have been, after there is no longer any danger of him reinfecting them, should be disinfected. The surface of the furniture and the woodwork of the doors and windows should be washed with a bichloride solution. There are in general but two ways of disinfecting the room that are worth while to consider. They are, first, by burning sulphur; second, by using formaldehyde. The latter is now considered to be the better, and, in fact, is about the only way that does the work. The best manner to use the formaldehyde is to close all openings of the room, open bureau drawers and closets, throw the clothing and bedding loosely over chairs and then hang one or two sheets, according to the size of the room (one sheet will answer for a small room), to a line stretched across the room. Each sheet should then be sprayed with at least a pint of a forty per cent. formaldehyde solution and the room left closed for six or eight hours.

Dietetic Measures.—The nourishment of the patient must be carefully looked after. The diet should be chiefly a liquid one, of a nutritious quality and given in liberal quantity to maintain the strength of the patient.

Medicinal Treatment.—We have at hand now a remedy for the treatment of diphtheria which is almost a specific. That remedy is antitoxine. It should be used early, the first day or two of the disease, and in large doses in all cases. While nearly all mild cases would get well without it, still it is well to use it, because some of the mild cases are liable to become suddenly severe, when it might be too late for the antitoxine to save them.

If the patient does not show marked improvement in from eight to twelve hours after the first dose, it should be repeated. No physician has done his duty who allows a patient to die of diphtheria without using antitoxine. In uncomplicated cases of true diphtheria antitoxine will be all the remedy needed. But in cases of mixed infection and in complications other remedies will be needed. Since it is not always possible to distinguish clinically cases of pure infection from those of mixed infection, it is best to use other remedies in all cases. By treating the local lesions and keeping down, if possible, the bacterial growth, the systemic infection ought to be lessened by lessening the amount of toxine to be absorbed. For the local treatment I have found nothing better than peroxide of hydrogen applied with a swab made of absorbent cotton wound around an applicator, followed by a swabbing with equal parts of glycerine and tincture of the chloride of iron with ten grains of chlorate of potash to the ounce. The local treatment should be applied every three or four hours during the beginning and active stages. If the patient is too weak to undergo so much swabbing, an antiseptic mouth wash can be used.

The constitutional treatment is to be supportive in the main, while symptoms should be met with appropriate treatment as they arise. Complications must be watched for and appropriately treated. It is well to give strychnine and tincture of the chloride of iron in all cases. If the membrane is extensive and the discharges from the nose and throat become purulent, sulphide of calcium should be given in often repeated doses until the system is charged with it. The bowels should be kept open and the temperature reduced by cool bathing or sponging if it runs high.

If the larynx is involved from the first or becomes involved later, antitoxine is to be used at once and in large doses, and iodized lime should be given in one-half to one grain doses every twenty or thirty minutes. If these measures do not relieve the patient, and if there is danger of suffocation, intubation or tracheotomy must be performed. These operations should be done early, before the patient becomes exhausted. Intubation is the operation to be selected, as it is less formidable, and as there is no cutting, it is more likely to be submitted to by the parents. No physician has done his duty who has a case of laryngeal diphteria or membraneous croup and allows the patient to die from suffocation, without doing or having done an intubation or tracheotomy. Without intubation, tracheotomy or antitoxine, the mortality from laryngeal diphtheria is fully 95 per cent. With intubation or tracheotomy alone, it is 75 per cent.; with intubation in conjunction with antitoxine it is only 10 to 25 per cent. Antitoxine, if used early, will greatly lessen the number of cases requiring intubation.

THE SELECTIVE ACTION ON THE CENTRAL NERVOUS SYSTEM OF SOME NEW MORPHIN DERIVATIVES.*

By ALBERT C. BARNES, M. D.,
of Philadelphia.
Translated by MAX R. DINKELSPIEL.

By boiling an alcoholic solution of potassium morphate with an equivalent quantity of potassium chlor-acetate, there is formed the potash salt of a new acid which most probably is to be considered as morphoxyl-acetic acid or morphin-glycolic acid. By adding an equivalent quantity of hydrochloric acid this newly formed acid will be liberated from the potash salt and, upon the addition of ether, crystallizes in the shape of pretty needles. The formula of the reaction is as follows:

$$C_{17}\ H_{18}\ NO_3\ K + ClCH_2\ COOK =$$
$$C_{17}\ H_{18}NO_3CH_2COOK + KCl$$

The pharmacological institute received a specimen from Dr. Vieth, of Ludwigshafen, who will describe its chemical properties elsewhere. Of these notes, for which I am indebted to Dr. Vieth, there is but to be stated, that this substance can be easily recrystalized by the addition of diluted alcohol, and at 192° C. manifests a definite decomposition with foam formation. As morphine, however, cannot be recovered from the acid, its composition cannot be considered with certainty as being that of morphoxyl-acetic acid; but, according to the nature of the production and the results of the elementary analysis, it is highly probable. We will preliminarily consider it as morphoxyl-acetic acid. The substance is easily soluble in water; with alkalies it

*From the Pharmacological Institute, Heidelberg, Archiv. f. experiment. Pathol. und Pharmakol. Band XLVI.

forms salts, and from alcohol the morphoxyl-acetate of potassium cystallizes in the form of needles.

Pharmacologically this morphoxyl-acetic acid is practically inert, 1 g. of the acid administered by the mouth causes in a medium-sized rabbit only a brief transitory stupor, similar to smaller doses of papaverin; 0.1 g. of the acid injected into a vein is also productive of mild symptoms. On the other hand, the methyl—and ethylester of this acid show a totally different physiologic activity. Administered subcutaneously and intravenously they are convulsion-producting poisons which in mammalia give rise to convulsions similar to those caused by picrotoxin.

The esters ensue according to the well-known "esterification" process performed by dissolving the acid in methyl or ethyl alcohol, and then adding hydrochloric acid. The esters thus formed may be separated from the acid which is insoluble in ether by means of ether extraction. The chlorides of the esters which are insoluble in water are varnish-like, but themselves soluble in water. Like all the other esters of glycolic acid, they are even in a cold atmosphere very easily saponified by potassium hydrate. Thus free morphoxyl-acetic acid again occurs which can be recognized by its decomposing point of 192°C. and by its crystal formation. Both from its manner of production as well as these results of saponification there can be no doubt but that the products thus ensuing are to be considered as the ethyl and methyl esters of the morphoxyl-acetic acid; and furthermore, the interesting contradistinction presents itself that from the non-poisonous acid, by means of "esterification", violent convulsion-producing poisons are produced. It is obvious, however, that here we do not have to deal with a process which is independent of the morphin complex; still I convinced myself that phenoxyl-acetic acid,—ethyl-ester, an analogously constructed compound to the morphine derivative, does not act as a convulsion-producing poison. The morphoxylpropionic acid which was produced by the same method proved to be a non-poisonous body; similar to the morphoxylacetic acid on the other hand, the morphoxyl-propionic acid ethyl-ester as well as the butyric, acid-ethyl-ester showed an entirely analogous convulsion-producing action as the ester of the acetic acid. I therefore gladly undertook to conduct an experimental analysis concerning these esters which Dr. Vieth has in a most obliging manner placed at my disposal. Their toxicological properties so resemble each other that one description will suffice for all four esters.

(*a*) ACTION UPON FROGS.

Doses of 2 mg. to 2 cg. produce in a frog (rana temporaria) at first but a mild narcosis, so that the customary movements with the head, and the entire body, do not take place when the plate containing the frog is turned around, but sometimes the frog assumed the dorsal posture permanently. At the same time there was noticed marked increase of the reflex excitability, amounting in some instances to mild twitchings.

From this condition there suddenly occur, and beginning with the well-known "cry", a series of clonic convulsions of the most violent nature, which so simulate the characteristic picrotoxin convulsions that a more detailed description is not necessary. The convulsions continue with periods of interruptions, but always gradually become more and more spastic, until in the end the animal cannot be differentiated from one that has been poisoned with strychnine. To this is soon added further central paralysis with relaxations, not however similar to that seen in poisoning from curare. Even with this condition present recovery may ensue, but as a rule death takes place.

The activity upon frogs may thus be briefly summarized. First, slight narcosis, then convulsions resembling those of picrotoxic poisoning, at the same time an increase in reflex excitability which later on is followed by strychnine-like convulsions, and finally central paralysis and death. In frogs whose spinal cords have been divided below the medulla some days previously, the picrotoxin-like convulsions were not plainly manifested, but in whom after the increase in the reflex excitability a condition occurred, in which apparently flexion and extension of the hind legs alternately ensued, and so activel that continuous motions took place, independent whether the animals were lying upon the anterior portions of their bodies, or upon their backs. Only after this symptom complex did well-defined convulsions occur, followed by paralysis.

The respiration of animals that are intact is first affected but slightly, but then there occur marked spasmodic respirations, and in groups which are interrupted by longer periods of time, until eventually respiration ceases.

In the heart there occurs a gradual decrease in frequency principally caused by the increased periods in the individual beats, which grew for instance from an inestimably short time to 2.3 seconds, while the duration of the contractions increases but little (for instance from 1 second to 1.4 seconds). In this case there is not an associated action on the part of the pneumogastric nerve, for even after atropinization all the manifestations again occur, unchanged.

Almost in all cases there occurred in a short time a symptom complex on the part of the ventricle, which consisted in the fact that the auricle pulsated rhythmically and slowly, while the ventricle did not contract with every auricular systole, but lost a contraction after every second or third beat only again to contract, after the next auricular systole. (1) The acme of the ventricular pulsation does not change first, but gradually the energy of the cardiac contraction decreases, until cessation of the heart-beat occurs.

If therefore the action of our substances on frogs is of a relatively complicated nature, consisting of strychnine-like convulsions, paralysis with influence on the heart, it seems, on the other hand, in cases of mammalia, and especially in rabbits, that the symptom complex is confined to a purely convulsive type.

(*b*) ACTION ON MAMMALIA.

Doses of 0.02-0.05 g. for every kilogram of weight, if given subcutaneously, occasion in from three to ten minutes violent convulsive seizures in

(1) Note: Such changes, which have frequently been observed in various poisons, have been the subject of more detailed analysis by Straub in the case of antiarin poisoning (Archiv f. experiment. Pathol. u. Pharmakol. B. XLV. S. 346)

the rabbit; these convulsions may either be preceded by a prodromal stage, in which the animal assumes an attitude with its head retracted, the legs slightly spread, and visibly trembling, or the convulsions may occur suddenly. The rabbit may be hurled through the air in a great arc and from the table to the floor; then it lies upon its side and performs a series of the most violent clonic but coordinated movements with its extremities, and also movements simulating those performed by the limbs in the act of stamping, beginning these with intervals of rest but soon continuing uninterrupted. In the course of these movements brief opisthotonus and spasticity may occur, which, however, are soon lost when the clonic movements ensue. The facial musculature becomes the seat of violent mimic convulsions, the eyes show rotary nystagmus, but the most characteristic of all are the violent spasms of the muscles of mastication, during which the animal grinds its teeth, and often bites its tongue and lips until they bleed.

The animal may succumb even in the first attack, if the convulsions involve the muscles of respiration; but if a few artificial respirations are conducted during this stage, and the one immediately following, it will be seen that the respiratory centre is not paralyzed. Furthermore, the animal may lie in convulsions for hours even if ten times the dose is administered, provided artificial respiration is opportunely instituted, but always for a brief period at a time. It is astonishing that in the course of these manipulations the vital centres are not exhausted. A decrease in the convulsions however could not be demonstrated.

By intravenous injection much smaller doses are effective. Two to three mg. will precipitate convulsive seizures, which occur very quickly, but from which the animal recovers in a remarkably short period of time. In interesting contradistinction to these very violent and, if not fatal, quickly transitory action of intravenous dosage, there is the activity of the ester when it is given by the mouth. Even twenty times the dose which is given subcutaneously, and which kills in about five minutes with the most violent convulsions, the administration of the drug into the stomach of a rabbit remains completely without effect. This dependence of the action upon the portal of administration is to be attributed to the ease with which the esters decompose and which in the intestinal canal meet in the processes of absorption the conditions which are essential for their decomposition into the non-poisonous morphoxyl-acetic acid and alcohol.

The experiments which follow were all conducted with subcutaneous injections. Five minutes after death, which had been preceded by long continued convulsions, rigor mortis was very marked; in one-half hour the animal was completely stiff. During the convulsions the bodily temperature (per rectum) increased in one case from 39.35° C. to 39.8° C. In a dog in whom the temperature was taken in the esophagus six minutes after death the thermometer registered 33° C.

In the dog and in the cat convulsions occur exactly similar to those seen in the rabbit. In the dog there first occur, after the subcutaneous dosage, vomiting and diarrhea, and in both animals a flow of saliva. After a prodromal stage, during which the animals crouch in fear upon every sound, there follow the typical convulsions, the clonic movement of the legs resembling running and floundering, and spasmodic twitchings of the tail and neck, spasms of the muscles of mastication, etc. During these attacks dogs must be subjected to artificial respiration.

During these convulsions the muscles of the hind leg of a rabbit were exposed. Lightning-like spasms of all the muscles and individual groups of muscles were plainly seen, while fibrillar twitchings were absent.

The respiration under the administration of doses that did not cause convulsions, was not markedly affected.

The analysis of the blood pressure in the rabbit showed that the blood pressure curve remained absolutely unchanged until the convulsions set in. Likewise it could be demonstrated that after injections of large toxic doses in curarized animals, no changes in the blood pressures took place. It therefore follows that the vasomotor centres are not associated in the action of these bodies. This phenomenon again stands out in vivid contradistinction to the convulsions which are caused by picrotoxin and allied poisons, and in which, as is well known, the vasomotor centres become excited simultaneously with the occurrence of the convulsion. The same applies also to the behavior of the blood pressure in animals which had the most violent convulsions. At the expiration of the convulsion, the blood pressure curve simply returns to normal, and does not sink after every attack, as we are accustomed to observe after the strychnine convulsions. Even after the animals have remained for several hours in the state of the most violent convulsions, the blood pressure will still be found at its normal height. It therefore shows that the convulsions themselves, even if they are most violent and prolonged, have no fatiguing or exhausting influence upon the vasomotor centres. On the other hand, the blood pressure is very susceptible towards respiratory disturbances. After every cessation of respiration occurring during spasms of the respiratory muscles, there follow marked reductions in the blood pressure which only gradually again become equalized. It is therefore advisable in these experiments constantly to perform artificial respiration. During the increase of blood pressure in the non-curarized animal, a slowing of the pulse may take place, caused by the increase of pressure and participation of the pneumogastric nerve; otherwise the pulse remains entirely unchanged. The action upon the pneumogastric nerve, likewise in contradistinction to picrotoxin poisoning, does not change. Division of the vagus as well as atropinization give rise to no characteristic changes in the course of the poisoning. This shows that the substances under consideration have as little influence upon the heart and blood vessels as upon the vasomotor centres. We have here to deal with a poison whose only action in the rabbit is a central one, and which gives rise to violent clonic convulsions.

The isolated action of these substances showed good prospects for determining their selective action upon the central nervous system of the rabbit.

For this purpose systematic experiments of division were conducted, concerning whose interesting results the following reports are tabulated.

The operations, at which I was granted the pleasure of Dr. Magnus's assistance, were conducted under ether anesthesia. All symptoms of shock were allowed to disappear before the experiments were commenced. The autopsy invariably followed the poisoning, and the success of the poisoning and its localization established.

Experiment 1. Rabbit, 1010 G.

10 o'clock. Division of the spinal column at the level of the second dorsal vertebra under ether narcosis. The animal is then placed in an incubation oven at a temperature of 28°C in order to prevent fall of temperature. In the afternoon the reflexes (patellar reflex, responses upon pinching) are demonstrable; the posterior portion of the body being paralyzed.

3.10-3.20 o'clock, injection of 0.08 g. of ethyl morphoxyl-acetic acid ester.

3.22 o'clock. Restlessness present at the anterior portion of the animal's body.

3.40 o'clock. Marked clonic convulsions at the anterior portion of the body; jerking of the fore leg and spasms of the muscles of mastication. The posterior portion of the body is remaining absolutely quiet; the patellar reflexes etc. are absolutely unchanged.

3.50 o'clock. Respiration has ceased and in consequence there is slight stretching of the hind legs, the movements however immediately ceasing upon artificial respiration.

3.57 o'clock. The convulsive movements of the forelegs continue uninterrupted.

3.58 o'clock. Death due to a failure of respiration.

Postmortem examination confirms the complete division of the spinal cord at a level of the second dorsal vertebra.

This experiment, as well as many others, most plainly show that the spinal cord is absolutely unassociated with the occurrence of the convulsions. This is interesting in contradistinction to picro toxin which, according to Luchsinger (1) and Gottlieb (2), also produces convulsions emanating from the spinal cord.

The next requisite was to jointly remove the medulla and the spinal cord from the brain.

Experiment 2. Rabbit 1040 G.

10.30 o'clock. After inserting the tracheal canula, the skull was opened at the occiput, the cerebellum exposed and the same as well as the pons divided. After this there were marked movements on the part of the animal, the pupils were dilated at maximum and upon introducing a sound into the wound, were contracted at maximum. The corneal reflex was permanently extinguished.

10.58 o'clock. Spontaneous breathing; the reflexes in the legs are marked and even increased.

11 o'clock. 11.20 o'clock. 11.40 o'clock. 12.02 o'clock. Injection of 0.05 of ethyl morphoxyl-acetic acid ester. No convulsions followed. The reflexes permanently increased. The animal was killed. Postmortem examination showed that the incision has divided the cerebellum and pons directly in the middle.

Only upon the left side there exists, laterally a narrow undivided bridge of the cerebellar hemisphere. The pons was entirely divided.

This shows that in contradistinction to picrotoxin our substance does not attack the medulla oblongata. The next experiment subserves the question, as to whether the cerebrum is essential for the production of the conclusions.

Experiment 3. Rabbit, 950 G.

3.25 o'clock. After tracheotomy the skull is opened under ether anesthesia and both cerebral hemispheres removed with a sharp curette. Slight hemorrhage, followed by good respiration and preserved corneal reflex. The patellar reflexes were slightly exaggerated. At the beginning of the experiment the animal assumed a lateral posture.

3.39 o'clock. 0.1 g. ethyl morphoxyl-acetic acid ester. The animal sits very quietly.

3.47 o'clock. Typical convulsions in all the legs, facial muscles, muscles of mastication, etc.

3.55 o'clock. The animal is killed. Postmortem examination showed the following: medulla, cerebellum, pons, chiasm, crura, corpora quadrigemina and optic thalami are intact. The third ventricle lies open. The incision extends on both sides along the lateral quarter of the optic thalami obliquely from without posteriorly to within anteriorly, so that before the foramen of Monroe and corresponding to the beginning of the corpus callosum a piece remains. Both hemispheres are entirely absent.

This shows, therefore, that the characteristic convulsions still occur in that animal whose cerebrum has been extirpated.

The next experiment confirms the result and in addition shows that even other portions may be absent without preventing the occurrence of the convulsions.

Experiment 4. Rabbit 930 G.

4.00 o'clock. Opening of the skull. Extirpation of the cerebrum. Brief shock with cessation of respiration. Artificial respiration.

4.30 o'clock. Spontaneous breathing again. Reflexes in the legs plainly demonstrable. Gradually there occurred plainly visible rotary movements of the entire body.

4.50 o'clock, 0.1 g. of ethyl morphoxyl-acetic acid ester.

5 o'clock. In the midst of the rotary movements, the picture suddenly changes, and the characteristic movements occasioned by the morphin derivatives suddenly and most violently take place, and are clearly differentiated from the previous movements of the animal.

5.13 o'clock. The animal is killed. Postmortem examination: The medulla, pons, peduncles, optic chiasm, cerebellum and corpora quadrigemina are preserved. The incision extends transversely through the middle of the optic thalami and the third ventricle up to a point immediately anterior to the optic chiasm. On the righ side, everything is removed except the half of the thalamus, and on the left side there remains a small portion of the occipital lobe, laterally from the thalamus.

If therefore the cerebrum and the optic thalamus are divided, the convulsions still occur. It did not appear advisable to continue the division posteriorly, as even in this experiment movements occurred which indicated encroachment on vital centres, and as these would become predominant, it would cause difficulty in differentiating them from the convulsions under observations.

On the other hand, it appeared necessary to investigate whether the manifestations occurred unchanged after removal of the cerebellum, as Lucani (1), after the removal of the cerebellum in dogs, had observed conditions which had some similarity to those under consideration.

Experiment 5. Rabbit, 2300 G.

11.30 o'clock. Exposure of occiput under ether narcosis. Removal of the external occipital protuberance. Trephination in the middle line. Excochleation of the cerebellum through this opening by means of a wire snare. Moderate hemorrhage.

12 o'clock. Animal is in the lateral position and is breathing spontaneously. All reflexes distinct.

12.10 to 12.40 o'clock. Injection of 0.3 g. ethyl-morphoxyl-acetic acid-ester.

12.44 o'clock. Typical convulsions, which throw the animal from the table.

Postmortem examination: There is no blood in the trephine opening, but only brain detritus. Corpora quadrigemina, pons, medulla and roof of the fourth ventricle are intact. Hemispheres entirely removed. Only a few ragged pieces of tissue are still attached to the cerebellar peduncles.

Therefore extirpation of the cerebellum does not prevent the occurrence of the convulsions.

(1) Luchsinger, Pflueger's Archiv Bd, XVI, S. 532. 1878.

(2) Gottlieb, Archiv f. exper. Pathol. u. Pharmakol. Bd. XXX. S 21 1892

(1) Luciani, Das Kleinhirn. Leipzig 1893.

The experiments of division therefore show that an incision extending through the middle of the pons is sufficient to prevent the action of the substance under consideration; and furthermore, that distinct convulsions occur when the brain stem is preserved up to the middle of the optic thalami.

Spinal cord, medulla oblongata and cerebellum are unassociated in the occurrence of these convulsions.

Binswanger (2) has shown that there are centres in the anterior portions of the pons of the rabbit, the irritation of which gives rise to the same association of movements (running, stamping, pushing and striking movements) and of the most violent nature, similar to those observed in our experiment with the poison. Binswanger states that: "these reflex centers of the pons represent a collective station of the various spinal centers, and serve as an adjustment of the most extensive associated movement. The designation "convulsion" centres certainly does not represent the physiological location of the same. This, however, does not exclude the fact that, under definite presumption, a pathologically increased stimulation or an abnormal irritation may so excite these centres as to give rise to diffuse convulsive movements. Only in the latter sense can the designation "convulsion centres" be maintained.

Such an "abnormal stimulus" seems, as a matter of fact, to be produced by the examined poisons, either by action upon the very same centres which are described by Binswanger, or upon similar ones situated in the middle brain. The convulsive movements occurring thereafter show the character of well associated movements, as the above named author has established, and also have their selective action in the same nerve area.

Conclusions.

1. *While morphoxyl-acetic acid and its homologues are relatively non-poisonous bodies, their methyl and ethyl esters represent violent convulsion-producing poisons, which in frogs and mammalia produce picrotoxin-like convulsions.*

2. *While, in the frog, the spinal cord is associated with the toxic action of the substances, in the case of the rabbit the spinal cord, medulla, cerebrum and cerebellum remain unaffected. The only point of selective action giving rise to the characteristic manifestations is situated in the brain-stem.*

(2) Binswanger, Archiv fuer Pyschiatrie Bd. XIX S.759 1888.

PERNICIOUS ANEMIA IN THE LIGHT OF THE MODERN TOXIN HYPOTHESIS.

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(Continued).

I come now to speak of pernicious anemia developing in the course of pregnancy. If a genetic connection really exists between gravidity and anemia, it is not altogether unlikely that this form of pernicious anemia also owes its existence to the effect of a toxin. Some authors even suggest that during pregnancy toxic elements circulate in the blood, which are able to cause the occurrence of morbid symptoms, like emesis, nephritis, eclampsia (compare Ahfeld (1). Under these circumstances it may well be imagined that sometimes severe anemic conditions develop from the same cause. At the same time, the possibility must be admitted, that pregnancy is not the essential cause of anemia, but only an auxiliary cause in the meaning of Immermann.

If we then consider those pernicious anemias produced by hemorrhages, we have to admit at once that it is difficult to make the cause of this form of pernicious anemia consistent with the toxin hypothesis. To be at all able to discuss this question, we have to at first explain some of the changes which are brought about in the economy of the body by the loss of blood.

Under ordinary circumstances red blood corpuscles are continually destroyed and formed anew, and, the number of erythrocytes in the same individual being approximately constant, destruction and re-formation must equalize each other. We do not know the proper cause of this remarkable conduct, but it may be due to the fact that in the destruction of the cells peculiar elements are produced which serve as an irritation upon the hematopoietic organs. The larger the work done by the blood corpuscles and, consequently, the larger the number of the worn-out and destroyed cells, the larger becomes the quantity of that material, which acts upon the bone marrow, and therefore also the number of the new formed erythrocytes.

If an individual loses a quantity of his blood the consequence will be that the remaining blood cells have to do the same amount of work which, under normal circumstances, is performed by the unreduced quantity of blood corpuscles. The remaining corpuscles are thus subjected to much more intense labor than is their normal share. It can now be imagined that the material mentioned, produced by the activity of the erythrocytes, is formed in greater proportion than under normal conditions, or, rather, that other elements make their appearance which produce a still more intense irritation upon the bone marrow.

At any rate in this manner it becomes comprehensible why bone marrow, after a hemorrhage, assumes a more intensely red color and, in connection with it, a more active formation of blood corpuscles commences, which is able to replenish the number of corpuscles within a comparatively short time.

But an entirely different result will be seen, if a person is attacked by repeated losses of blood (and these are generally responsible for the origin of the form of anemia in question). Then it is possible that the above irritants accumulate in the body in quantities large enough to begin exerting a deleterious influence upon the red blood corpuscles. Such a conduct would not be without a certain analogy, for there are signs which indicate that some of the ordinary blood toxins have a similar effect upon the number of erythrocytes, according to their administration, in small or large doses (Battinisti and Rovere (4), Marti, (62), Bettmann (5), Lazarus (54, p. 181), and also later in this paper).

I do not intend to go into further details on this matter, especially as I am lacking sufficient experience in this form of anemia and am not even able to say whether it fulfills the usual criteria of pernicious anemia. At any rate, it may be

inferred from what has been said, that in the development of this form of anemia the possibility of some kind of a toxic effect is not *absolutely* inconceivable, and that, too, if the possible presence of an "unknown intermediate agent is disregarded."

Incidentally it may be said that the above hypothesis also throws some light upon the much contested question of the cause of the **increase of the blood corpuscles,** observed in mountain climates and in some disturbances of the circulation. This is suggested, if one considers that mountain climate (especially attenuation of the air) and disturbances of the circulation cause abnormal conditions in the organism to a certain extent similar to those due to losses of blood. The main object of the red blood corpuscles being to further the process of oxidation, it seems necessary, in order to accomplish this without disturbance, that the amount of oxygen of the blood does not suffer any reduction. The conditions to comply with the last named postulate are:—not only that the number of blood corpuscles remain unchanged, but also that the respired air contains the normal amount of oxygen, and comes into contact in sufficient quantity with the blood of the pulmonary alveoli.

Even if the number of the erythrocytes is normal, with any of the remaining conditions uncomplied with, the blood corpuscles have to perform more than the normal amount of work to be able to fulfill their function. An increase in activity occurs, and this leads to the formation of chemical combinations which induce a hyper-activity of the bone marrow, and thus produce a genuine polycythemia (or hyperemia). *Mutatis mutandis* the same procedure is repeated here which takes place when a muscle, for instance the heart, is to perform for some length of time a larger amount of work than under usual conditions. The organ increases in size, a real hypertrophy develops.

This explanation, the main points of which were reported in the work of Rosenqvist and myself (90, p. 346), on "the nature of the changes in the blood in mountain climates," was objected to by Zuntz (145), who says "that it is not comprehensible how one can apply the vitalistic conception, "hyper-activity," to a simple chemical process of dissociation which takes places in the crystallized hemoglobin in precisely the same manner as in the blood corpuscles."

This remark, however, is, in my opinion, fully unauthorized, because the hemoglobin is to be regarded as an integrate part of the living cell protoplasm. Hoppe-Seyler has already expressed himself in regard to this subject as follows:" It is... plain that the pigment in the blood corpuscles is not in a simple solution, but rather in a closer chemical connection. . . . If such a connection did not exist, it would not be comprehensible how blood corpuscles can be washed with neutral salt solution without losing pigment, while the free pigment is always soluble in these salt solutions."

Besides, it has not been shown to my knowledge, that the living blood reacts to oxygen in the same manner as a simple hemoglobin solution. On the contrary, Loewy (59) insisted that the conditions of cohesion of the oxygen to the blood pigment in the experiments which he made with undefibrinized blood were essentially different from those of Hüffner with the hemaglobin, and that in such a manner, that the dissociation of the oxyhemaglobin was much more extensive with decreasing oxygen pressure than in Hüffner's experiments.

It is true, indeed, it has been demonstrated experimentally that the blood, with a decrease of the atmospherical pressure to about 400 mm. hg., is still capable of becoming fully saturated with oxygen; and in spite of this an increase of blood corpuscles occurs at places where the barometer shows a pressure of but little below the normal. One should think that in this condition the appearance of a polycythemia is unwarranted and inexplicable. But this is not the case. We have to remember that "under extraordinary circumstances almost every organ of the body is capable of more than its normal amount of work; they possess a reserve energy which is now made use of. Thus it happens that only 24 hours after a nephrectomy the same amount of urine is passed daily with the same amount of solid substances as before."—(O. Hertwig (41)).

But in order not to tax this reserve energy for too long a time, a hypertrophy of the other kidney will soon develop and "the correlative growth of the kidney will last until a compensation has taken place."—(O. Hertwig (41)).

It is my opinion that the blood acts in quite an analogous manner, and therefore in the increase of blood corpuscles, which occurs in mountain climates and attenuated air, we have to deal with a genuine manifestation of compensation and assimilation, and that one of the most interesting which have as yet become known.

The above explanation appears particularly plausible, if one traces the elimination of carbonic acid and the absorption of oxygen by the blood not to a simple process of diffusion, but to the activity of the lungs as Bohr does (2).

After this digression, which may be pardoned on account of my great interest in the problem of altitude climate, I return to the proper subject of my essay.

It remains to consider the anemias which originate in connection with infectious diseases and intoxications. Without further comment, the significance of the toxin hypothesis in these forms of anemia is evident.

A review of what has been said shows that it is doubtful whether all the above-mentioned forms of anemia "with known etiology" should be classified as pernicious, and this refers especially to ankylostomiasis.

Among those which really deserve the epithet pernicious, the bothriocephalus anemia unquestionably has the most transparent etiology. Regarding the other forms belonging to this class, it remains doubtful, with a few rare exceptions, whether their causative factor should be considered the actual original cause of the disease, or whether they are not to be regarded rather as auxiliary elements only, in the meaning of Immermann.

But if we assume that the mentioned etiological factors are the real originators of the affection, even then it does not appear entirely impossible that most

of the above anemia forms may find an easy explanation by the toxin hypothesis.

But how shall we represent to ourselves the development and the course of pernicious anemia in detail with the aid of this hypothesis?

4.

Clinical experience teaches us that the onset of the disease is generally insidious. Rarely only do we see a more or less sudden beginning. We are not able to tell if and how long the toxin has been active in the organism, before its presence is manifested by some plainly noticeable signs. However, we know of some facts which entitle us to presume that the toxin may sometimes have circulated in the body for quite a time before we are able to demonstrate any morbid symptoms.

I refer here to the results of experimental investigation which are at our disposal. In scrutinizing the reports of Bignani and Dionisi (8), von Voss (101) and principally of Tallqvist (99), we find that an animal, which is under the influence of a toxemic, reacts to the first doses of the toxin with a distinct reduction of the number of blood corpuscles and of the amount of pigment, while the following doses, as large or even larger, of the same toxin, are not accompanied with a further reduction, but frequently even with an increase of blood corpuscles and hemoglobin. Not until the doses are still more increased, does a distinct reduction of the erythrocytes, consequently an anemia, reoccur.

Similar results were obtained by the experiments made by Tallqvist and myself (91) to produce an anemia in dogs by introduction of freshly expelled bothriocephali. The first dose always had a very pronounced effect, the following ones, however, a much less, or even caused an increase of the blood corpuscles.

In all these cases it is the question of administering comparatively large quantities of toxins. If very small doses are given, no reduction, but from the beginning an increase of the erythrocytes is brought about. These facts enable us to understand that an individual may be subject to the effect of a blood toxin, at least during a certain time, without any anemic symptoms necessarily developing, and that, too, although the blood is not at all refractory to the respective agent. If this may be considered demonstrated, it occurs to me as possible that in pernicious anemia the time of incubation—if this expression be permissible—may often be quite considerable, or that the effect of the anemia poison may remain latent for some time.

We will now examine in what manner the anemia poison produces the reduction of the blood corpuscles. Three different opinions have been formed in this respect:

1. That an increased destruction of red blood corpuscles takes place (Neumann (68), Quincke (81 b), Silbermann (93), W. Hunter (44) and others).

2. That a defective or faulty new-formation of blood corpuscles is brought about (Cohnheim (16), Pepper (78), Hayem (39), H. F. Müller (65) and others).

3. That both these disturbances co-operate in causing anemia (Eichhorst (23), Birch-Hirschfeld (9), Ehrlich (21), Byrom Bramwell (14) and others).

Which of these three opions has the greatest probability in its favor?

As far as I can infer from the literature, most investigators incline at present to the last-named view. But if this were correct, pernicious anemia would *inevitably*, and that within a very short time, lead to death. A different result can scarcely be imagined, as not only the consumption of blood corpuscles has increased, but, at the same time, their replacement is defective. However, we see very frequently—as emphasized principally by Runeberg (85)—that quite remarkable remissions may occur in the course of an anemia, and this, to my experience, applies also to cases in which no therapeutic measures have been taken.

With this fact confronting us, is it correct to uphold the hypothesis in question?

I do not think so, much less so, because the results of the experimental investigation speak very decidedly against the above opinion.

Above all we wish to connect with these results our thoughts on the manner in which the anemia toxins act.

If a toxin, such as just expelled bothriocephalus proglottides, is administered to an animal in moderate doses a distinct reduction of the amount of blood corpuscles can be demonstrated even within twenty-four hours. It would surely be a rather forced conclusion to maintain that this reduction, which sometimes amounts to one million or still more, should depend solely upon a faulty production of red blood corpuscles. Even supposing that the function of the bone marrow be entirely suspended in consequence of the effect of the toxin, the deficiency of erythrocytes could not be accounted for because to our present knowledge, the capability of the bone marrow under ordinary circumstances is not sufficient to produce one million of blood cells within 24 hours.

In order to render the decrease in the number of blood corpuscles comprehensible, we have therefore to resort to the assumption of an increased destruction, and, indeed, the appearance of blood corpuscle-debris and the iron combinations, which are demonstrated in increased proportion in different organs, are weighty signs for such a procedure.

But if a defective blood formation is not the *sole* cause of the erythrocyte deficit, may it not possibly be an auxiliary factor?

Even this, I cannot admit. In investigating the conduct of the bone marrow under the influence of the toxin, we find that this organ almost immediately commences to produce blood corpuscles in larger quantities than before.

It has been stated before, that after the first dose of the poison a comparatively large decrease in the number of erythrocytes can be observed. If the toxin is administered to the animal in equally large doses during the following days, a much more insignificant or an opposite reaction of the blood sets in. The number of blood corpuscles decreases considerably more slowly, sometimes even an increase occurs which is frequently so large that the original amount is reached within a very short time.

It is true, we must admit the cause of this

manifestation to be in part, that the first dose destroyed those cells which could offer the least resistance, while the remaining are better able to withstand the effect of the poison; also the possibility of the occurrence of a certain immunity (cfr. Bignami and Dionisi) cannot be denied.

But suppose these facts are held responsible for the non-appearance of a further decrease in the number of the blood corpuscles, their rapid replacement can only be explained by the fact that the bone marrow is stimulated to an increased activity (cfr. Tallqvist). The visible expression of this increased ability we find in the intense reddening of the lymphoid marrow and in the change of the yellow into red, hemocytogenetic marrow.

But what is the essential cause of this reaction of the bone marrow? To my opinion it is explained not only by the created deficiency of hemaglobin, but also directly by the blood toxins. This is substantiated by the following observations:

1. It must be emphasized, as demonstrated by Mazzoni (64a) and Battistini and Rovere (4) that pyrodin in small doses does not cause a decrease, but from the beginning an increase in the number of blood corpuscles.

2. Some of the results of the investigations reported by Marti (62) are to be considered here.

He demonstrated that rats which were bled, and whose backs had been brushed with oil of sinapis, regained their blood, mostly above the normal, quicker than rats which were not brushed.

He was, furthermore, able to prove that rats treated in the same manner with croton oil (10%), but not bled before, showed a considerably less amount of erythrocytes than before the treatment, while "two normal rats which remained in the same cage with those crotonized, and through mutual rubbing obtained a part of the oil," presented a very much larger number of blood corpuscles than before.

It can scarcely be supposed that, as maintained by Marti, the materials used in this instance could have acted as an irritant of the skin only; in my opinion it is much more reasonable to presume that they acted as genuine blood toxins.

Finally it must be mentioned that, according to Bettmann (5, p. 492) arsenic should also be considered as a direct formative irritant of the bone marrow.

Before going further we will try to obtain some knowledge of how the immunity suggested may be achieved.

Evidently two possibilities are to be considered: (1) that, through the effect of the toxin, elements are introduced into the blood which neutralize the agent mentioned and (2) that the blood, by means of the poison, is deprived of certain elements which represent a necessary condition to the course of the hemolytic process.

Which of these alternatives is of the greater importance?

I believe, for the following reasons, that the first is the more probable.

We have to bear in mind what has been said in relation to the effect of the blood toxins. The first dose causes an unmistakable reduction of the number of blood corpuscles, the second equally large, displays an effect much less decided and the third possibly none at all, while a larger dose, on the other hand, still causes a decided decrease of the number of erythrocytes.

If the blood, in the latter case, were lacking any substance essential for the occurrence of a cytolysis, the conduct just described would not be comprehensible at all; but it would be different, if the earlier doses had created elements of an antitoxic character, because under such circumstances the process may take the following course:

As soon as the poison encounters erythrocytes in the blood, which are susceptible to its effect, it combines with certain specific elements of the same and causes changes to occur in their protoplasm which terminate in the complete destruction of the cell.

Now it can be imagined that the dissolution of the blood corpuscles has been accomplished before all the affinities of the cell eager for poison have had time to become saturated with the virus, and the natural consequence will be, that the affinities which are not taken possession of by the virus will be absorbed by the blood plasma. In a later dose the poison will meet, in the first place, these affinities, or let us call them antitoxins, which are suspended in the plasma, it becomes tied up by them and is, consequently, not able to attack as many blood corpuscles as the first time.

If the administration of toxin is continued, there will appear a time, finally, at which a quantity of antitoxin is present in the plasma, large enough to neutralize the quantity of poison in question. A larger dose, however, is not completely neutralized, and is therefore still able to dissolve a certain number of blood corpuscles.

I shall refer to this hypothesis at another place, and then, if possible, investigate it experimentally.

There are no reasons why those blood corpuscles, which are formed under the influence of the toxin, should be less capable of resistance than those produced under normal conditions. Bettmann's (5, p. 492) studies on arsenic poisoning prove rather, that at least a part of the new-formed elements possesses an increased resistibility, and a similar experience was gained by Battistini and Rovere (4) in their experiments with pyrodin. The same conclusion can also be drawn from Tallqvist's (99, p. 107) investigations of pyrodin and pyrogallol anemias.

A *circulus vitiosus* in the meaning of Eichhorst does, therefore, not exist here.

Consequently, by reason of what has been said, it is probable that the effect of the blood toxin refers synchronously to the erythocytes circulating in the blood and to the bone marrow. On the former the noxa acts destructively, on the latter as a plastic irritation and prompts it to greater activity (Bettman 5, p. 492)).

If the administration of the toxin is kept up continually, a struggle arises between these two components of the toxin effect, and the further course of the intoxication evidently depends upon which of the two will preponderate.

Should it appear in a given case, that the disintegration of erythrocytes is larger than the reproduction, and even if the number of blood corpuscles has become quite low, a favorable change is still possible. The new-formation of blood corpuscles may gain the lead and the number of erythrocytes again reach a considerable amount. Thus sev-

eral periods of aggravation and improvement may alternate, until finally, if the administration of the poison keeps on uninterruptedly and the doses are increased, the anemia becomes extreme and death occurs with symptoms of general exhaustion.

In the manner just depicted the course of experimental toxanemias is shaped in general, if the toxin is administered daily in moderate doses.

We see that in this respect a remarkable conformity exists between the anemias mentioned and pernicious anemias; for, precisely as in the latter, also in the former occur aggravations and improvements of the condition.

Now then, if this peculiar course of the experimentally produced anemias be caused by the fact that the effect of the toxin is divided into two opposite components, then it can scarcely be denied that a similar process also takes place in pernicious anemia. This supposition should be considered permissible, although the two forms of anemia referred to present certain differences otherwise.

I wish to specially call attention to the fact that experimental botheriocephalus anemias take a very similar course as other anemias produced artificially.

The last-named show also remarkable analogies with the pernicious anemias (Tallqvist (99) in relation to the clinical and anatomical picture. Regarding especially the blood finding, it is particularly interesting that the color index is also increased to above the normal in experimental toxanemias (Battistini and Rovere (4), Tallqvist (99)), also that, besides micro, macro and poikilocytes, megaloblasts are likewise found in the blood (Battistini and Rovere (4). The so-called hemoglobinemic degeneration, however, which is considered characteristic of most toxanemias, is absent in pernicious anemia. Different is also the conduct of the leukocytes, because, according to the majority of investigators, in experimental anemias exists ,a more or less pronounced increase of these elements. Only Battistini and Rovere claim to have seen their number remain stationary or even to decrease during the last phase of the intoxication.

From what has been said above it is scarcely to be inferred that pernicious anemia is caused by an increased hematolysis in connection with a faulty hematogenesis. Only one of these two factors, and that the former, can, as a rule, be determining for the occurrence of the affection; otherwise the course just described could not be explained.

Some direct observations speak also in favor of this view. On the one hand, unmistakable expressions of an increased blood consumption (before all, siderosis) are found in this affection, and, on the other, sufficient signs of a production which has declined to below the normal are entirely absent; in fact, there are several indications which suggest an increased activity of the hematopoietic apparatus (lymphoidization of the yellow bone marrow and nucleated erythrocytes in the circulation).

Pernicious anemia should therefore, in my opinion, in most cases be traced to an excessive cytolysis; it depends upon a relative, not an absolute insufficiency of the hematopoietic organs.

If we adhere to this view the question arises, why the affection in all those numerous cases, in which the *causa mali* is not or can not be removed, sooner or later takes a lethal termination? This fact appears rather abstruse, if such powers of defense, as described before, are at the disposal of the organism. But in my opinion it is here the question of similar processes as in compensation of a heart defect. The muscle may, in cases in which a hypertrophy develops, balance the abnormal resistance for some time, but in the long run this is rarely possible, be it that the growing myocardium does not keep step with the increasing resistance, or that the hypertrophied organ finally succumbs to a degenerative process.

I imagine that the bone marrow acts in an analogous manner in pernicious anemia. Generally here also a hypertrophy develops, which, however, is of different strength and diffusion in the different cases; only in comparatively rare cases no reaction at all occurs on the part of the bone marrow (Eichhorst, Ehrlich, Birch-Hirschfeld and others).

This varying power of reaction of the hematopoietic apparatus is reflected in the course of the anemia. If no lymphoid transformation of the bone marrow can be demonstrated, the disease will uncontrollably lead to death (Birch-Hirschfeld (9, p. 24), and is then, in the strictest sense of the word, progressive. Here periods of decline and improvement alternate before the lethal termination sets in.

If we make an attempt to explain the deeper cause of this discontinuous course, two possibilities are to be considered: Either the cytolysis occurs periodically with greater tensity, or the compensating power of the bone marrow is subject to considerable fluctuations.

To support the first possibility the conduct of the urobilinuria may be referred to before all. I have demonstrated this symptom (89) in several cases of bothriocephalus anemia but missed it in others. The negative finding may probably only be caused by the fact that the examination was made during a period when the degeneration was not excessive. It is not admissible to at once assume that no urobilinuria occurred in previous periods, because an increased blood consumption must be considered characteristic of all cases of genuine bothriocephalus anemia, and urobilinuria is considered the expression of this manifestation.

For the second alternative there are at present no undoubted points of support, but I incline to the opinion that it may also be able to play a part, and therefore that it may here be the question of a cooperation of both factors.

But what causes the occurrence of death in these cases of intermittent course? Of course it has, as the last resort, to be ascribed to the fact that the compensation on the part of the bone marrow finally becomes absolutely insufficient, whether this is brought about by the excessive increase of the cytolysis, or whether here, as in other hypertrophic conditions, a moment appears at which the organ to perform its function subsides.

In the latter case something like fatigue would occur; but, for reasons which I am going to discuss more fully later on, I doubt in this manifestation the peculiar transformation of the bone marrow which

Ehrlich designated as megaloblastic degeneration is of any significance.

5.

Are we able to form an idea as to how the best known of all pernicious anemias from the etiological standpoint—bothriocephalus anemia—originates?

In keeping with several other authors (von Noorden (70), Litten (57)) I have assumed that the broad tapeworm in itself is not able to cause a grave anemia.

The following reasons lead me to form this opinion:

1. In countries where this parasite is more frequent, only very small numbers of individuals, who harbor the same in their intestine, suffer from symptoms of a severe anemia. In Finland, for example, about 15 to 20 per cent. of the inhabitants are afflicted with bothriocephalus (Runeberg (86), Schauman (89), Klimenko (50)), and yet bothriocephalus anemia is a comparatively rare affection. Among 7,008 patients who were cared for in the medical clinic at Helsingfors during ten years (1883-1893) only 72, or about 1 per cent., suffered from bothriocephalus anemia. Therefore, it can be safely assumed that only a fraction of one per cent. of all such persons, who are infected with this parasite, are attacked by a severe anemia.

2. The parasite may be lodged in the intestine of an individual for years before the anemia occurs.

3. A person who has recovered from a bothriocephalus anemia may remain in good health in spite of renewed infection with the tapeworm .

In conformity with several other investigators I therefore concluded that an unknown intermediate agent represents the real cause of the anemia, and thought, before all, of the occurrence of a specific infection in the intestinal tract. By means of this infectious element the worm might become toxic; without it, it is in my opinion unable to produce a severe anemia.

In a general way the question becomes very nearly the same as that raised by Schapiro (88) and Dehio[1] (17), because it is well known they contend, that it is not the healthy, but the diseased (Schapiro) or the dead (Dehio) parasite which causes the anemia. Common to all these opinions is the fact that they connect the supposed intermediate agent with the worm proper.

It cannot be denied that there is much in favor of such a view, but it has not the same force as formerly, since it has been demonstrated by Tallqvist and myself (91) that not only worms from pernicious anemia patients, but also those from other patients and from healthy persons contain a genuine blood toxin.

Now it may be said that, although all bothriocephali are toxic, the toxicity of the different specimens may vary. However, not much is gained by such a supposition, because this cannot in itself explain the great infrequency of bothriocephalus anemia.

The same holds good for the statement of Askanazy (3) that the time during which the parasite is present in the intestine should be of importance. He says "the supposition should not be dismissed that, if the intoxication theory is entitled to consideration, the anemia syndrome does not appear until a certain, individually varying degree of intensity is reached, so that the presence for some time of the parasite produces the anemia, while a short sojourn leaves the blood still intact."

There cannot be any doubt that the worm in most cases remains for several years, sometimes tens of years, in the intestine, before the anemia sets in. This is fully demonstrated by my observations. But it is another question as to whether this fact is of *decisive* importance for the origin of the anemia. I personally do not believe it, for I have seen very old individuals who observed the broad tape worm in their stools from the time of youth, but who never underwent any treatment and in spite of this never suffered from anemia.

But if we abstract from the suppostion of an intermediate agent to be referred to the parasite, the question arises, how can be explained the frequency of the bothriocephalus as contrasted with the infrequency of the anemia caused by the same, as well as the other conditions referring to it?

At first one might think that the toxin of the parasite is absorbed by the blood under quite exceptional circumstances. But this idea does not appear to be very plausible, because the parasite is apt to cause morbid symptoms, such as headache, palpitation of the heart, dyspepsia, in cases also in which no anemia can be recognized. It is true, it may be said that these disturbances are not due to the toxic influences of the worm, but to reflex action. But it has to be emphasized in regard to this point that it appears rather forced, to interpret some of the worm symptoms as toxic effects, others again as reflex symptoms. As it is most probable that the anemia depends upon the resorption of the toxin, it is most natural to ascribe a similar origin to the other symptoms just referred to. (Peiper 77).

But if such a train of thought be admitted, it becomes evident that the toxin may enter the blood without producing anemia. To resume our original quesion, how, then, can the non-appearance of anemia be explained under these circumstances?

In the first place, the essential nature or, let us say, the individual ability of the reaction of the organism to the poison should be considered. We can imagine that the blood and the hematopoietic apparatus of man is in general refractory to the virus of the bothriocephalus, but that, under certain conditions this immunity will be more or less restricted. Of course, we do not know the causes of such a change in the organism, but probably they are of various kinds. Possibly different debilitating factors, infectious diseases, loss of humors, bad hygienic conditions (auxiliary factors in the meaning of Immermann) come into consideration, but

1 In favor of the opinion upheld by Dehio, it has been maintained that on administration of a parasiticide in bothriocephalus anemia sometimes no worm or only fragments of one were expelled, although the eggs disappear from the feces after the cure (compare Schauman (89, p. 181)). But this conduct should not be pronounced the cause of anemia; it may just as much be the consequence of the latter and be explained by the fact that the parasite in the intestine of a severely anemic individual does not find the condition necessary for its existence and dies.

It may also be considered that the expelled worm—at least in microscopical examination—frequently does not present any pathological manifestations.

possibly it may mostly be the question of elements so subtile that they elude our observation.

Meanwhile the anamnesis of many patients will contain points which are of value in this respect.

Bruhn-Fahraeus (13) calls attention that in one of his two cases influenza preceded the onset of anemia, and also in some of my cases it was claimed that the first anemic symptoms appeared after this disease. In other cases anemia followed acute gastroenteritis, chronic alcoholism, etc.

In certain cases there may be a congenital predisposition; this may be indicated by the fact that the same individual is repeatedly attacked by the affection. In my list of cases of 1894 there are already three cases in which the patients were twice admitted to the clinic on account of different attacks, and during the last few years I have been in a position to observe several similar cases, especially, one, an old lady, who was cured three times.

Another observation claims quite considerable interest in this connection. In the clinic of this city bothriocephalus anemia was noticed in two sisters, both servants; one, 35 years old, was treated by me (89) as No. 23; the other, 26 years old, was admitted in 1894 and described by Möller (67) as No. 6. Both were weak since childhood and both succumbed to anemia, one after two and the other after five years.

Although, according to the above, it is probable that a congenital or acquired disposition is to be considered in connection with the origin of bothriocephalus anemia, yet it does not seem impossible that the conditions may be explained in the following manner:

I have remarked that the body may be under the continuous influence of a notorious blood toxin and, although the blood is not refractory to the poison, yet no reduction of the amount of blood corpuscles need occur. This is rendered feasible, partly because a relative immunity may develop, party because the reduction of erythrocytes may be covered by increased production. As long as these preservatives functionate well, no anemia occurs, but as soon as they become insufficient, anemia appears. This insufficiency may possibly be brought about by the same auxiliary moments as referred to before.

This method of observation therefore assumes that an increased cytolysis may take place for years in individuals with a bothriocephalus, although they present no anemic symptoms. It is true this is not impossible, but as long as it has not been proven by direct investigations, I am inclined to consider more probable the supposition of a special predisposition as a necessary pathological factor in bothriocephalus anemia. With the present state of our knowledge, however, we are not able to do more than surmise.

Are we then in a position to imagine that the conditions for the origin of the other pernicious anemias are similar to those of bothriocephalus anemia? In my opinion this is more probable, because on account of the great similarity of these forms of anemia, not only with reference to their general clinical and hematological but also their pathologico-anatomical manifestations, it must be assumed that the causes also are analogous.

This similarity, moreover, is admitted by almost all modern investigators. The only author still opposed to it, is Warfwinge (102).

He emphasizes, on the one hand, that in a symptomatic respect there are remarkable differences between Biermer's and bothriocephalus anemia, and maintains that in several of the cases in question one had to deal solely with anomalies of digestion, originated by the tapeworm, which led to anemia. But, on the other hand, he claims that it is a question of a purely accidental coincidence of the parasite and pernicious(!) anemia and that, consequently, the whole causal connection is doubtful. Warfwinge's standpoint is, therefore, not quite positive.

If, accordingly, the above considerations on the pathogenesis of bothriocephalus anemia are correct in nothing but the main points, the supposition is suggested that likewise those toxins which we surmise to be the real cause of the so-called cryptogenetic pernicious anemias are much more disseminated than one is led to believe from the frequency of these affections.

Individuals, therefore, who present no demonstrable signs of an anemia, could be the carriers of the agents in question, and only in the predisposed would the affection make its appearance.

That there, too, hereditary influences may sometimes play a part is proven by the fact that this form of anemia has also been observed in several members of the same family. Sinkler and Eshner (94) claim to have seen three cases in one family, and Klein (49) reports that he has treated two sisters who both died of pernicious anemia.

The number of such cases may possibly be increased in future, if more attention is paid to this point. But mostly the question will be as to an acquired disposition which may originate in the manner already described in bothriocephalus anemia.

If I have thus devoted a good deal of space to the constitutional factor in the pathogenesis of pernicious anemia, I have by this means taken a standpoint which has been entirely foreign to some of the older authors. Not to let examples be wanting I quote Immermann's (46, p. 212) dictum in discussing the etiological data elicited by Biermer: "I am also most decidedly in favor of considering the mentioned harmful influence to be auxiliary causes which, with other existing predisposition[1] immediately give rise to or precipitate the breaking out of the disease, but just as decidedly I deny their cardinal significance for the origin of progressive pernicious anemia."

Runeberg (85), Laache (52b) and others express the opinion that individual disposition plays an important part in the origin of pernicious anemia.

(To be continued.)

The Value of Oxygen Inhalations.—E. Aron (*Berliner Klinische Woch.*, September 23, 1901) has carefully investigated the value of inhalations of oxygen in health and disease, and after eight years experience he concludes that they are comparatively valueless except in cases of poisoning by carbonic oxide or anilin oil and in conditions resulting from the inhalation of rarefied air.

1 Circulated by me.

Abstracts of Therapeutic Literature.

SURGERY.

A Dozen Cases of Spinal Analgesia in Operations on Children Under Six Years and a Half.—At a meeting of the New York Academy of Medicine, May 9, 1901, Dr. W. S. Bainbridge presented a paper on this subject. The needle which he employs is so constructed that it will not break at the point, but will readily bend in the shank. Since the publication last December of his paper on spinal analgesia, the first contribution on the use of this method in children, he had employed it in 12 operations, done on children varying in age from four months to six years and a half. He had compared the action of cocain and eucain in the same case, and had shown that the beta eucain is far less reliable than cocain. Three different injections of beta eucain were given in order to give sufficient dosage. Vomiting occurred and lasted for a few minutes, but the only analgesia induced was patchy and irregular and passed off very quickly, so that it had become necessary to postpone the operation until another day. The operations described in the paper included osteotomies, the radical cure of hernia, circumcision and cauterization of the rectum for prolapsus. The author said that there had only been two cases reported so far, both by himself, in which subarachnoid injections of cocain had produced analgesia all over the body. Dr. Bainbridge said that he had carefully examined the literature of 1080 cases, and there had been no cases of complete analgesia reported, and not a death.

Operative Treatment of Simple Fractures.—C. H. Golding-Bird, in an article in the *Practitioner*, (August, 1901) treats of the operative treatment of simple fractures. Skiagraphy, notwithstanding the aid which it affords in diagnosis, must not be the sole test of the surgeon's work, nor indicate the standard up to which operative procedures should be carried. The value of massage as an adjunct of treatment is emphasized. He does not recommend open operation for Pott's fracture in the greater number of cases, but where restoration of position, after treatment of splints has not succeeded, and open operation is both safe and the ideal treatment. Some surgeons use the osteoclast. The technique of the various operations used is discussed. As to fracture of the patella, it has been for many years his custom to operate by transverse methods by wiring and it has been universally successful. The treatment of separation of epiphyses and vicious and distorted union; non-union, and the operation of bone grafting are described; as is also the treatment of compound, or open fractures.

Ligation of Abdominal Aorta for Aneurysm.—Dr. Robert T. Morris, of New York, in a paper read before the semi-annual meeting of the Medical Society of the State of New York, October 15 and 16, 1901, reported this case and presented the specimen. This is the fourteenth case of the kind on record, and all had terminated fatally. Ten of the cases had occurred before the days of aseptic surgery. His patient was a feeble syphilitic woman, twenty-four years of age, who had been suffering from the aneurysm for four months. He had applied a temporary ligature to the abdominal aorta, two inches below the aneurysm, the intention being to cure the aneurysm and then restore the circulation by removing the ligature. The ligature employed consisted of a broad catheter held in place by steel forceps. The aneurysm was cured and the ligature was removed on the twenty-seventh day. Just as there was an excellent prospect of achieving success, the patient was unexpectedly overwhelmed by sepsis. The autopsy showed that death had resulted from gangrene of a loop of bowel brought about by the pressure of the intestine against the steel forceps. The use of the forceps was evidently a fault in the technique.

Chronic Hydrocephalus Treated by Tapping and Introduction of Aseptic Air.—William Ewart and W. L. Dickinson report two cases (*Pediatrics*, October 15, 1901) of chronic hydrocephalus treated by the induction of artificial pneumocephalus. In this case they have modified the operation of tapping the ventricles, and in such manner as to obtain a complete evacuation of the fluid by allowing aseptic air to take its place. For this purpose, in addition to Southey's canula and India-rubber tube acting as a drain, a second Southey's canula was provided with a sterilized India-rubber tube, the free end of which was connected with the nozzle of a small glass syringe from which the piston had been removed and the broad end of which was plugged with cotton-wool after sterilization. The two trocars were then ready for introduction into the fontanelle with all asceptic precautions and with careful avoidance of the vicinity of the sinus, the site for the outflow puncture being selected at a short distance below that for the air supply, and too great a rapidity of outflow being guarded against by a regulating small screw-clip such as is used for feeding bottles. The operation planned on these lines was successfully caried out, with the results anticipated, namely, a considerable output of fluid, a considerable reduction in size of the head, and the cessation of the pressure symptoms for the relief of which the tapping had been undertaken. They give the following provisional conclusions, warranted by their limited experience: 1. With due precautions the fluid of chronic hydrocephalus may be completely evacuated from the yet unclosed skull of infants, and aseptic air may be allowed to take its place. This operation may be repeated without detriment and with scarcely more risk than belongs to the usual method of paracentesis. 2. In favorable cases of moderate effusion, such as case 2, a single operation may suffice. Continued oozing from the puncture for a few days after the removal of the tubes is not unfavorable. 3. In cases of considerable effusion an obvious indication is to relieve the brain from the weight and from the pressure of the fluid. The evacuation is facilitated by the introduction of aseptic air. In case 1 this treatment has proved to be of decided advantage. By a timely repetition of the operation a hydrocephalic infant might be enabled to carry the weight of the head, and if the treatment were done sufficiently early, permanent damage to the brain tissue might be averted, and a normal development might perhaps ensue. 4. In large heads, while hydrocephalus persists, a considerable splashing sound is readily obtained. There is obvious risk in eliciting this sound by forcible succussion, and for the same reason any abrupt movement of the head should be avoided.

Hypertrophy of the Prostate.—Dr. Orville Horwitz (*Philadelphia Medical Journal*, June 8 and 22, 1901) discusses points emphasized by his study of one hundred and sixty-five operations for the relief of senile hypertrophy of the prostate gland. He says in conclusion: (1) Success following the Bottini operation depends on having perfect instruments; a good battery; the necessary skill, and the employment of a proper technique. (2) In suitable cases the Bottini is the safest and best radical operation thus far advised for the relief of prostate hypertrophy. (3) It is often very efficacious in advanced cases of obstruction as a palliative measure, rendering catheterism easy and painless, relieving spasm; lessening the tendency to constipation,and improving the general health. (4) It is of especial service in the beginning of obstructive symptoms due to hypertrophy of the prostate gland, and may be regarded as a means of preventing catheter life. (5) It is indicated in all forms of hypertrophy except where there is a valvular formation, or where there is an enormous overgrowth of the three lobes associated with tumor formation giving rise to a pouch, both above and below the prostate gland. (6) Where the bladder is hopelessly damaged, together with a general atheromatous condition of the blood vessels, associated with polyuria, results are negative. (7) Pyelitis is not a contra-indication to a resort to the operation. (8) The character of the prostatic growth has no bearing on the results of the operation.

Two Successful Cases of Operation for Perforated Gastric Ulcer.—E. Collingwood Andrews (*British Medical Journal*, September 21, 1901) reports two successful cases of operation for perforated gastric ulcer. In both of the cases there was considerable food in the stomach at the time of the operation, and it was impossible to empty the stomach through the pyloric opening. The constant pouring out of the stomach contents through the perforation rendered its closure difficult. Andrews makes it a rule to irrigate, if the contents of the stomach are widely diffused, but is satisfied with careful sponging, if the escape is moderate and limited. The first patient was a

young woman, 23 years old, who had suffered for some months with indigestion. She had never vomited blood. The symptoms of perforation were ushered in by a collapse which took place suddenly while the patient was carrying a tray. The patient suffered extreme pain; the abdomen was board-like and exquisitely tender. The abdomen was opened within a few hours and a perforated ulcer found near the cardiac end of the lesser curvature. The opening was closed with two Lembert sutures and the cavity washed out with saline solution. Both a drainage tube and gauze were used. The gauze drain was removed on the second day and the drainage tube on the third. On the fifth day there was a free action of the bowels after an oil injection and the patient was allowed milk by the mouth. The recovery was uneventful. The second case was that of a gentleman 30 years of age. In this case also the onset of symptoms was sudden and violent. When seen by Andrews, two hours after the first symptoms, the patient was found in a collapsed condition. The abdomen was rigid and distended and liver dulness was obliterated. Immediate operation was performed. A perforation was found on the lower border of the stomach ¾ of an inch from the pyloric orifice. In this case the escape of stomach contents was more or less limited and for cleansing only sponging was employed. A combination of tube and gauze drain was used as in the other case. The patient was fed per rectum for several days; the gauze drain was removed on the second, and the tube on the sixth day. Excepting a phlebitis in the right leg the recovery was uneventful.

Treatment of Contusion of the Kidney.—P. Delbet (*Annales des Maladies des Org. Gen.-Urin.*, July, 1901, quoted in *Jour. Amer. Med. Ass'n*). Delbet's conclusions, from one personal case and considerable experimental research, are that the treatment of renal contusion is of necessity purely spmptomatic. Immediate intervention is indicated on suspicion of intraperitoneal hemorrhage. Hematuria alone does not justify it. Secondary operation is indicated only in case of symptoms and gradually increasing subperitoneal hemorrhage, anuria or persisting hematuria. Intervention, however, is formally indicated in case of secondary hematuria. The operation should be as conservative as possible, unless the kidney has been torn from its pedicle, or is crushed completely or has the "dead leaf" color; any of these conditions demand nephrectomy. Otherwise the kidney should be merely exposed, tamponed and the wound left open. In the personal case described a young man had fallen from a second story. The kidneys showed no sign of injury at first, but suddenly hematuria and a swelling in the region developed, apparently cured by nephrectomy and suture. Five months later, however, the symptoms recurred, and notwithstanding attempted nephrectomy, death occurred in a few hours.

The Modern Treatment of Recent Fractures.—William H. Bennet (*Practitioner*, August, 1901) discusses the use of massage, early movements, and posture in the treatment of recent fractures. The method has never been advocated to the entire exclusion of the use of splints or of operation in the treatment of recent fractures, but the author believes that it should be used discretely as an adjunct to the ordinary methods, and modified as circumstances may demand. The method entirely obviates the stiffness, pain and other disadvantages which so constantly follow the treatment of fractures upon classical lines. Discussing massage, the author states that the amount of movement, if any, which occurs in the proper application of this method is not sufficient to interfere in any way with union, and need not, therefore, stand in the way of the application of common sense principles. The ease with which a difficult fracture can be manipulated after it has been subjected to gentle, smooth rubbing is often a revelation to those who have had no experience in the matter. The object of early passive movement in recent fractures is the very simple one of preventing adhesions, as opposed to the results of the older methods of absolute fixation of the limb. In any cases of fracture, after the fragments have been placed in accurate position, passive movements should be begun at once. The earliest movements can be effected without the removal of the splints, but in every case, as soon as the state of the fracture permits (from the third or fourth day onward), the splints should be loosened for gentle massage, by which the passive movement is not only rendered more easy, but also more effectual. The main points in making passive movements are the following: (1) Steady fixation of the fracture itself should be insured, either by the grasp of the hand or by appropriate splints or apparatus. (2) All movements must be gently but deliberately made, the hand must be firm and unhesitating, although gentle. In this way a sense of certainty and confidence is imparted which generally removes any inclination to resistance on the part of the muscles. It may be wise to practice movements first on the sound limb, in order to give the muscles some idea of what is expected of them. For the completely efficient employment of massage and early movements, the proper position of the affected limb is a matter of much moment. The danger of thrombosis and embolism, feared by some surgeons, does not exist more than in fractures treated by prolonged splinting. The method is not suited to those who lack discretion or who are defective in dexterity. The principal disabilities attaching to the union of fractures in faulty positions, unless the displacement be gross or of the rotary kind, are avoidable by the use of massage and early rotary movements.

The Use and Limitations of the Elastic Ligature in Intestinal Surgery.—Theodore A. McGraw (*Medical Record*) urges upon surgeons the use of his elastic ligature in intestinal anastomosis wherever possible. He points out the disadvantages and dangers of the Murphy button and the end-to-end anastomosis without the aid of mechanical means. He claims that in most instances the anastomosis can be made without these disadvantages and dangers if the elastic ligature be employed. It is the operation of gastro-enterostomy that it is to be particularly preferred to other methods. It is said that in this operation and in the operation upon the intestines it is rare for peristalsis to be established within the first 48 hours, and that therefore the immediate establishment of an opening can have little advantage over that produced by the elastic ligature, which requires from two to three days. In many operations upon dogs the author has never found the ligature to fail to produce the separation of tissue about which it is placed. The claims for this method are that there is no incision of the bowel, no loss of blood, no escape of the feces, and no exposure of the peritoneum from bowel contents. The ligature must be firm, hard, perfectly round, and at least 2 mm. in diameter. It is said to be a great saver where an enteroenterostomy is added to a gastroenterostomy. McGraw also claims that the elastic ligature will be found very useful in a division of cicatricial contraction of the intestine. After the ligature is tied, the peritoneal surfaces about it are brought together by Lembert sutures and by wrapping a portion of omentum about the anastomosis.

On the Question of Intraspinal Cocainization in Surgical Operations.—N. L. Polubogatoff-Galbreich (*Medicinskoie Obosrenie*, July, 1901) studied the effects of intraspinal cocainization of dogs and frogs. As a result the following precautions are presented: (1) Injections of a minimum dose and not exceeding 1 c.c. of the fluid should be made. (2) The strength of the solution should not exceed 1%. (3) The injection should be performed slowly, so as to avoid indirect pressure on the medulla. (4) Persons with short bodies (children) should not be subjected to cocainization, inasmuch as under these conditions the cocain comes rapidly in contact with the medulla. (5) Whenever this method of anesthesia is employed, the Trendelenburg position is contraindicated. (6) A weak heart is no contraindication. (7) Repeated cocainization at short intervals is well borne.

The Administration of Nitrate of Amyl for the Purpose of Diminishing the Disturbances Accompanying Spinal Injections of Cocain.—Cordera (*Gazz. degli. ospedali*, 1901, No. 72) employed nitrate of amyl in these cases as follows: Three to four drops are placed upon a cloth and are inhaled a few minutes after the cocain injection. The patient immediately becomes red in the face and the pupils contract. In order to maintain this condition of slight congestion, the procedure will have to be repeated from time to time; but only a few drops to be employed at each inhalation and the cloth is to be immediately removed if the symptoms become marked. Altogether from fifteen to twenty drops may be used. In 27

operations where the author employed this procedure, he claims to have observed no injurious consequences as the result of the drug.

Chloroform Anesthesia.—W. B. Vance (*Australian Medical Gazette*, 1901) states that the condition of the circulation can be estimated from watching the color of the lips during chloroform anesthesia. A failing circulation is at once indicated by them. Patients, while on the operating table, die from one of three causes: (1) anesthesia; (2) operation; (3) some accident. If death is due to the anesthetic, it is due to an overdose, and this, in a very large proportion of cases, I believe, can and should be guarded against. The pupils give the first indication of danger. They dilate from one of two causes: (1) operating during incomplete anesthesia; (2) the patient is getting an overdose. They dilate before respiration or the pulse gives any indication of threatening trouble. Immediately I notice them commencing to dilate I remove the mask and let the patient have plenty of fresh air. So far, no satisfactory remedy for post-anesthesia vomiting has been discovered. I have been greatly pleased, not only with the way in which the patient took it, but the vomiting was neither nil or else very slight. The degree of anesthesia in which we should leave our patients is a fruitful source of discussion. My practice is as follows: Dental operations.—Slight corneal reflex, post nasal, just enough to keep the patient quiet. Lung operations.—Slight corneal reflex, dilatation of cervix and urethra complete. All abdominal operations complete. Brain operations and operations on tongue and jaw.—Slight corneal reflex.

Results of Tendon Grafting in Infantile and Spastic Paralysis.—A. H. Tubby (*Pediatrics*, October 15, 1901) discusses the results of tendon grafting in infantile and spastic paralysis. There can be no doubt that tendon grafting as an operation has a distinct future before it. The method of treating paralytic talipes which has been most usually carried out has been to disregard the existence of the paralyzed muscles and by tenotomy to lengthen and therefore to weaken the muscles retaining their action; and then having by this means brought the foot into position, to keep it passively in one position. Tendon grafting aims at distributing what power is left to the muscles around the joints and then by careful education and training of such healthy muscles in their new attachments, to bring them into a condition of exaggerated size, action and nutrition. During the past four years he has performed 11 operations of tendon grafting on the feet for paralytic talipes, the results of which he now reports. Of these, four have been for calcaneo-valgus; two for talipes calcaneus; one for equino-valgus; three for equino-varus, and one for calcaneo-varus. In addition, four cases of spastic paralysis, affecting the fore-arm and hand, have been operated upon by the method consisting in the transplantation of the tendon of the pronator radii teres, with section of the flexor tendons of the wrist. Taking the group of four cases, namely, calcaneo-valgus, a condition due to the paralysis of the calf-muscles and of the tibialis anticus, he finds that the results have been good so far as the restoration of function is concerned in the paralyzed parts.

CONSTITUTIONAL DISEASES.

Quinic Acid, a New Remedy for Gout.—Hugo Sternfeld (*Münchener Med. Wochenschrift*, February 12, 1901, No. 7) states that the action of various fruits, like cherries, strawberries, etc. which effect the elimination of uric acid, does not depend as has been supposed upon vegetable substances, but is due to the quinic acid they contain. The quinic acid is changed in the body to benzoic acid and this again to hippuric acid, closely allied to uric acid, but which, however, is much easier soluble than the latter. Thus is explained its sometimes specific action in uric acid diathesis similar to the salts of salicylic acid used in articular rheumatism.

Indicanuria, Oxaluria and Diabetes.—Moraczewski's article (*Centralblatt für Innere Medizin*, July 6, 1901) is merely a suggestion that, since indicanuria is common in both oxaluria and diabetes, and since these two affections are not uncommonly present coincidently and seem to have some relation to each other, the indicanuria in diabetes may be the expression of oxalic acid poisoning in this disease. He believes that oxalic acid poisoning is the primary condition, and that this may produce the evidence of acid intoxication seen in diabetes. His idea that oxalic acid poisoning produces the indicanuria is based largely upon the fact that Elsa von der Leyde has found that indicanuria occurs after experimental intoxication of animals with oxalic acid.

INFECTIOUS DISEASES.

Sublimate-Serum and Vaccination in the Treatment of Plague.—C.Terni (*Brazil Medico*, May 1, 8 and 15, 1901) was commissioned by the Italian government to study plague and yellow fever in South America, and to test Baccelli's intravenous injections of sublimate. He believes that Haffkine's vaccination, as modified at the Institute of Hygiene at Messina, is the most approved method of immunizing men and animals against the plague. By his modifications he produces a vaccin much more rapid and active in smaller amounts than is obtained by any other method. A man inoculated with 2 c.c. has a chill and slight temperature in four hours, but sleeps well and wakes, sweating profusely, in normal condition, except for pain in tumefied glands, and is able to attend to his affairs within twenty-four hours. A serum of great curative value can be produced in animals hyperimmunized with virulent cultures. The bullock and the monkey are best adapted for the purpose, all animals being injected that are not naturally extremely resistant to the inoculations. This anti-plague serum stimulates phagocytosis, and, combined with .5 per cent. sublimate in intravenous injection, proved remarkably effective in the four cases of plague in which it was tried. The germs rapidly vanished from the blood and three patients rapidly recovered. The fourth showed marked improvement and treatment was suspended, but the patient died and the deep glands were found gravely infected from a primary bubo in the axilla. In all treatment of the plague, radical extirpation of the foci and surroundings is imperative, and the prognosis depends upon the thoroughness with which this is done. Terni obtains his extremely virulent material by inoculating guinea-pigs or monkeys with the plague bacillus direct. He first injects 10 to 15 c.c. of glycerinated bouillon or of a simple aqueous solution of 1 per cent. sodium chlorid and 3 per cent. pure glycerin, following this with a droplet of plague bacillus. The animal dies in two or three days and the peritoneal cavity contains about 30 c.c. of an exudate, which is an actual "cream" of plague bacilli. A single drop will kill a guinea-pig or monkey in twenty-four hours. One unit by weight of bacterial protein—equivalent to a liter of glycerin beef-tea culture—is contained in about .5 c.c. of this exudate, which has to be diluted to a fifth to prevent coagulation. He uses 1 mg. of the dry exudate of 1 c.c. of an aqueous solution of .5 per cent. sodium chlorid and carbonate; the latter has a tendency to soften the envelop of the bacteria. He avoids injury to the elements of the vaccin by sterilizing it at the low temperature of 55 C., repeated at intervals during several days, and then adds 1 per cent. phenic acid. This vaccin is extremely rapid in its action, and not more than 1 to 2 c.c. are required, as mentioned above, a vast saving of time, material and effort. (This valuable abstract appeared in the *Journal of the American Medical Assoc.*, July 14, 1901).

Picric Acid in Smallpox.—J. F. Romero (*Cronica Medico Mexicana*, August 1, 1901, quoted in *Jour. Amer. Med. Ass'n*). reports that of 162 cases of smallpox 46 recovered without noticeable scars and 101 without a single trace of pitting. All had been treated with picric acid applied as a lotion or in a salve, and pitting occurred in only 15 cases. The picric acid probably acts by destroying the pyogenic germs that may find their way into the pustules. In a number of cases the confluent pustules covered the exposed parts of the body and the legs, but under the picric acid they subsided without a trace. In many instances he noted the coincidence that other members of the family failed to contract the smallpox from patients duly treated with picric acid. Its use was suggested by accident in a community where there was no drug store and where nothing else was available. His formula for the lotion is 2 gm. of picric acid in 15 gm. of alcohol and 185 gm. of water, to apply three times a day. When the pustules are already suppurating, he

substitutes a salve of 1 to 50 gm. picric acid in 100 gm. lanolin or fluid vaselin, and 6 gm. alcohol, applying it four times a day.

Concerning the First Attack of Typhoidal Cystitis and Its Treatment.—Horton-Smith (*Mon. f. Urologie*, VI, 5. Hft) states that this variety of cystitis appears not rarely in a mild form. It generally begins suddenly toward the termination of an attack of enteric fever, occasionally appearing during convalescence, and rarely during an earlier stage of the disease. Examination of the urine shows it to be turbid, containing pus, a generally acid reaction and millions of typhoid bacilli in the sediment. Albumin may be present in slight quantities or entirely absent. The patients sometimes complain of abnormally frequent micturation with pain, although frequently this is not the case. The administration of 0.65 of urotropin three times daily for one week generally proves successful. Without treatment the affection sometimes lasts for weeks and sometimes longer and disappears gradually.

The Duration of Immunity from Diphtheria Antitoxin.—Dr. Henry D. Jump, Philadelphia, in a paper read before the Philadelphia Meeting of the Pennsylvania State Medical Society in September, 1901, gave as his experience the injection of 500 units when the patient has been exposed. He had thus used the injection of the antitoxin in the cases of twenty children and no accident had occurred. It was his custom to isolate the sick person, disinfect the room, and remove well persons, each being given an immunizing doze. Ilustrative cases were cited.

Acute Rheumatism.—M. W. Kerr (*Medical News*, October 5, 1901), describing his treatment of acute rheumatism, says that rest in bed is an essential factor and should be maintained for at least ten days after the temperature has become normal and all other symptoms of the case have disappeared. Freedom from pain in the joints must not be taken as the indication for allowing any indulgence to the patient, because cardiac changes may arise after the joints have recovered; furthermore, myocardial changes may exist with very few symptoms until the muscle yields under imposed strain, and therefore the patient should be kept at rest so that both myocardium and endocardium may have ample opportunity to recover from any injury to their structure. Sodium salicylate is the remedy most frequently used in the treatment of rheumatism. It should be given in doses of twenty grains every two hours until the fever is reduced and the acute articular pain subsides; after this the intervals between the doses may be increased to four or six hours, and continued in this way for at least four weeks. If the drug be discontinued before this time, the patient is almost certain to suffer from a return of symptoms, and hence it has been said that acute rheumatism, like other fevers, is a self-limiting disease and that salicylates do not shorten its duration, but merely prevent its injurious effects upon the tissues. If the salicylates distress the stomach, depress the heart, cause delirium or other nervous disturbances, or give rise to various skin eruptions, then salicin or salol may be substituted, if there is no renal disturbance. He also advises an alkali in addition, such as citrate of potash, twenty grains at a dose. Cardiac complication can be cut short by small blisters. As to diet, milk should be the chief food until the symptoms abate; then broths and farinaceous substances may be gradually added. Blaud's pills are advised while there is anemia.

Should Fever be Treated.—In an article on this subject (*La Semaine Medicale*, June 13, 1901) R. Lepine concludes that although the hyperthermia may be the index to the severity of the febrile process, it is by no means the most important factor, and our aim should be to treat the cause of the fever. This can be accomplished in diphtheria, malaria, articular rheumatism, but in other disease, we are dependent on antipyretics of hydrotherapy. Quinine, he says, seems to have an almost specific action in influenza, as has also peyramydon, which Lepine much prefers to antipyron. It is better born and requires smaller amounts. The fever accompanying anemia should also be treated, and he recommends quinine for this purpose. Discussing the fever of tuberculosis, he calls attention to the important points that antipyretics, even the most innocent, sometimes produce collapse in phthisical subjects. Alcohol in these cases is serviceable. The treatment of typhoid fever is best accomplished by cold baths, with such medical agents in addition as may be indicated. In pneumonia, the pyrexia is not necessarily injurious. This disease, with its excessive local lesions, can scarcely be called pneumonia. He states the possibility that the high temprature may have an unfavorable effect on pneumococcus, or may favor the defensive reaction.

DISEASES OF WOMEN.

A Satisfactory Operation for Certain Cases of Retroversion of the Uterus.—Webster (*Journal of the American Medical Association*, October 5, 1901) describes a new operation for retroversion of the uterus as follows: The patient being in the Trendelenburg position, the abdomen is opened, adhesions are separated and other pathological conditions which may be present attended to. The fundus of the uterus is elevated and pushed forward. A small hole is then made through the broad ligaments on one side under the utero-ovarian ligament near the uterus. Through it a pair of forceps is passed from behind in order to grasp the round ligament about an inch from its uterine end. The latter is then pulled through the broad ligament in a double fold. It is carried across the back of the uterus a short distance above the utero-sacral ligaments and is then stitched in this position with chromic cat-gut. A similar procedure is carried out on the other side, the second round ligament being stitched to the back of the uterus above or below the first one or crossing it. The amount of overlapping of the round ligaments depends upon their length or laxity. Each ligament is also stitched to the edge of the hole in the broad ligament. As a result the round ligaments are much shortened and act both in elevating the uterus as a whole and preventing it from returning to its retroverted position.

Operative Treatment of Inversion of the Uterus.—W. Thorn (*Münchener Medicinische Wochenschift*, June 10, 1901) reports a case of total inversion three months after childbirth in a very anemic patient, which had resisted all treatment and attempts at reduction. Hemorrhage occurred at every intervention. Thorn operated and opened the anterior cul-de-sac, incised the anterior wall of the uterus, and was then able to reduce the inversion after breaking up the adhesions. The walls of the uterus were sutured together, commencing at the fundus, and the organ was supported by a broad stitch taken through the anterior wall, the peritoneum of the cul-de-sac and the vagina. The bleeding was slight and the patient rapidly recovered, leaving her bed the ninth day, and the clinic six days later.

The Ultimate Results of Operation for Cancer of the Uterus.—Dr. Charles P. Noble, of Philadelphia, (before the Medical Society of the State of Pennsylvania, September Meeting, 1901) stated the greatest problem before the medical world to-day to be the causation and cure of cancer. Recent literature shows that hysterectomy for cancer of the cervix cures about 10 per cent. of cases, based upon the standpoint of freedom from recurrence at the end of five years, statistics varying from a percentage of zero to twenty of cures. Hysterectomy for cancer of the body of the uterus gives 75 per cent. of cures. Dr. Noble reports thirty-two cases of hysterectomy for cancer. Ten of these have died of recurrence and one of pneumonia. Six cases have disappeared, two cases of cancer of the cervix have had recurrence, and the remaining thirteen are free from recurrence at the present time. The hope for improvement in results lies in early diagnosis. Dr. Noble strongly urges all cases with irregular discharges should be promptly investigated.

GENITO-URINARY SYSTEM.

Syphilitic Fever.—Thomas B. Futcher (*New York Medical Journal*, June 22, 1901) reports three cases of syphilitic fever from the service of Professor William Osler. He says: Syphilitic fever may occur at various periods during the course of the infection. (1) It may occur, in very rare instances, so long as three or four weeks before the onset of the secondary skin eruption. This early fever is puzzling, and is likely to be attributed to some other cause until the eruption makes its appearance. (2) It

may precede or be coincident with the appearance of the secondary eruption. This is the so-called fever of invasion, and it is a very common and important symptom of secondary syphilis. (3) The fever may occur at any time during the course of the secondary or tertiary stages. The late occurrence of the fever is a most interesting feature. The fever of invasion is rarely absent at the onset of the secondary symptom. It is sometimes wanting, however. It usually precedes the appearance of the secondary eruption by a week or ten days. Rarely does it antedate the eruption by more than two weeks. Practically all authorities agree now that this fever is a symptom of the invasion of the system by the organism believed to be the cause of syphilis or by its toxic products. At the onset of the fever there is often a transitory erythema of the skin, which disappears, to be followed by the true syphilitic roseola a few days later. It is usually accompanied by headache, malaise, general depression, and rheumatoid pains throughout the body, which are most annoying in the afternoon. The height of the fever varies greatly in different cases. It may only be moderate, not reaching above 101°F. On the other hand the daily elevation may be much higher, the afternoon temperature reaching as high as 104° to 105° F. The fever of invasion, as well as the syphilitic fever associated with the late manifestations of the disease, may present any one of the following three clinical types of fever: (1) A mild continuous pyrexia, where the temperature ranges in the neighborhood of 101° F. Osler states that this type is not uncommon in the fever which ushers in the constitutional symptoms. (2) A remittent type of fever, with morning drops toward normal and evening exacerbations. This, as already stated, is considered the usual character of the fever of invasion. (3) A definite intermittent fever. This is the most remarkable form of all and is the type which is most likely to lead to error in diagnosis. The following points may be emphasized in connection with syphilitic fever: (1) In all cases of fever of obscure origin the possibilities of it being syphilitic should be borne in mind. (2) Experience has shown that physicians of reputation, as well as those of limited experience, are prone to mistake the condition for one of the acute specific fevers. (3) The affections for which syphilitic fever is most often mistaken are malaria, typhoid fever, tuberculosis, sepsis, and occasionally rheumatic fever. (4) The fever may occur as early as four weeks previous to the appearance of the secondary skin eruption, or, which is of greater importance, late in the disease after tertiary manifestations have existed for years. (5) The fever may be continuous, remittent or intermittent. The remittent type is regarded as the most frequent form in the fever of invasion. The fever is often associated with chills and sweating. (6) Careful examination of the long bones and viscera for evidences of tertitary lues should be made in all cases of fever of obscure origin.

A Case of Gonorrheal Rheumatism in a Girl 6 Years Old.—D. Ph. Rumiantseff (*Dietskaia Medicina*, No. 3, 1901) reports the case of a little girl who developed an acute, painful swelling of the left ankle. The girl had a purulent discharge from the vagina, which upon microscopic examination proved to contain gonococci.

PHARMACOLOGY.

Medical Phosphorus Poisoning.—Nebelthau (*Münchener Med. Wochenschrift*, August 20, 1901) reports the case of a child of two years who took 3 mg. of phosphorus in the course of sixty hours, combined with cod-liver oil in the usual proportions. The child was well-nourished, but showed symptoms of rachitis. Symptoms of rapidly fatal phosphorus intoxication developed, confirmed by the pathologic changes in the organs. In future, Nebelthau proposes to reduce the proportion of phosphorus from .01 to .001 per cent., a teaspoonful twice a day, not increasing the dose until convinced of its harmlessness.

Subcutaneous Injections of Gelatin for Hemostasis.—Grunow (*Berliner Klin. Wochenschrift*, August 12, 1901). Twenty-seven cases of severe internal hemorrhage were treated at Quincke's clinic by the subcutaneous injection of gelatin, with only one death. In seven cases the hemorrhage was from the lungs, including one of gangrene consecutive to injury from swallowing lye. Five days after the first injection, a quantity of clots was expectorated, with 380 c.c. of blood. Four days later another mass of clots was expelled with less blood. The largest clot was the size of the finger, with distinct ramifications. In fifteen days the sputum was quite free from blood. The patient died a week or so later from the consequences of an abscess, not from hemorrhage. In 8 cases the hemorrhage was in the intestines; six in the course of typhoid, one in leukemia and one in purpura hemorrhagica. In 7 the hemorrhage was free from the stomach; from ulcer in 5, carcinoma in 1, and hemophilia in 1. Twice the hemorrhage was from the bladder, twice from the kidney and once from an aneurysm. In the overwhelming majority of cases the hemorrhage was arrested, transiently or permanently. The failures were probably due to inadequate dosage. As the hemostatic influence of the gelatin is transient, it is administered daily as long as necessary, injecting 2 gm. of gelatin in each thigh, dissolved in 100 gm. of salt solution, using a bulb instead of a syringe with the air filtered through cotton. The apparatus is kept always ready for immediate use. Other hemostatics were applied at the same time, but the recurrence of the hemorrhage when the amount of gelatin was reduced, and the expulsion of large, tough coagula, indicate that the gelatin was principally responsible for the hemostasis. The gelatin is useless unless a sufficient quantity is injected and repeated as long as the tendency to hemorrhage persists, and for a few days afterward. There are no contraindications. The temperature commences to rise a few hours after the injection in nearly every instance, sometimes accompanied by a chill, and may reach 102° or 103°,or even to 104° F.,but is lower at each succeeding injection. In one case a 3 per cent. solution was used, and three tumors developed under cool skin, quite tender, but subsiding in a couple of days. Uriticaria was observed several times in one case. These by-effects are disturbing to nervous patients, but their inconveniences are not sufficient to prohibit the use of the gelatin in case of severe internal hemorrhages. The degree of pain of the injection is proportional to the tension of the tissues. The gelatin is absorbed in a few minutes to twenty-four hours or longer. Absorption is more rapid in lean patients with loose subcutis and in patients who have lost much blood. The needle should be pointed in various directions to distribute the gelatin as much as possible. The urine was free from blood in eight days after commencing the injections in a case of acute hemorrhagic nephritis. In a case of aneurysm of the pulmonary artery, systematic injections were followed by the retrogression and final disappearance of all the symptoms of perforation, including a palpable, fluctuating tumor under the skin.

Formaldehyde Gas for Destroying Mosquitoes.—Dr. M. J. Rosenau declares, in a recent issue of Public Health reports, (*Medical Record*. October 12, 1901) that experiments undertaken by him have shown that formaldehyde gas is an efficient insecticide so far as the mosquito is concerned. The experiments were all made upon the *Culex pungens*, and it was found that an exposure of three hours was invariably sufficient to kill all the mosquitoes of this variety in a confined space, provided the gas was used in amounts usually employed for disinfection.

Iodo-Hydrargyrum Cacodylate in Syphilis.—L. Brocq (*Presse Medicale*, July 17,1901) reports that forty-nine syphilitics were treated with subcutaneous injections of a combination of sodium cacodylate, sodium iodid and mercury biniodid. The results show that this is an excellent combination for syphilis with marked disturbance in nutrition, with emaciation,or neurasthenia, with rebellious secondary cutaneous and mucous membrane manifestations, when there are seborrhoid complications, and during tertiary accidents when an energetic action is desired without disturbing the alimentary canal. The solution can be sterilized at 120° C. and mixes with the blood serum without a precipitate. The injections were very slightly, if at all, painful and no abscesses followed its use. Only seven of the 31 cases followed to date were uninfluenced by the treatment.

Phospho-Creosote Medication in Tuberculosis.—S. Bernheim (*Revue Internationale de Therapie Physique*, ii, 3, 1901). states as the conclusion of an exhaustive study of creosote on man and on animals that the polyethers of creosote are far superior to creosote itself for thera-

peutic purposes. Among the creosote polyethers those containing a phosphorus element are the most effective in the treatment of tuberculosis, as they require essentially the same treatment as hypoacidity. Phosphoric acid seems the best adapted for the purpose, as this acid enters so largely into the composition of the tissues. The phosphate of iron dominates in the blood corpuscles; the phosphate of potassium in the nervous system; the phosphate of magnesium in muscular tissues, and the phosphate of calcium in bones. In tuberculosis, more than in any other disease, the hypoacidity is accompanied by phosphaturia and phosphoric acid possesses also the advantage of combating the nervous troubles which result from this exaggerated elimination of the phosphates. Creosote stimulates the activity of the cells and phagocytosis, and is thus an indirect specific for tuberculosis.

Technique of Subcutaneous Injections of Iron.—A. Plessi (*Gazzetta Degli Ospedali*, July 7, 1901) states that the contradictory experience of physicians with the subcutaneous injection of various preparations of iron is probably due to the point selected for the injections. The citrate of iron and ammonium is preferred at Galvagni's clinic, where the results of this method of administering iron have always been brilliantly satisfactory. A series of 359 injections, showed that only 3 out of 54 injections in the back were free from some after-disturbance, while nothing of the kind was observed with 288 out of 305 gluteal injections.

TUBERCULOSIS.

Home Treatment of Tuberculosis.—*The Journal of the American Medical Association*, August, 24, 1901, says the fundamental needs of patients suffering from tuberculosis are fresh air, good food and rest, and Hance points out how these may be obtained at the patient's home. A south and west room with windows on two sides and an open fire place for winter; in summer an east room with windows on the south will meet the indications. For the summer, tent life, day and night, is the ideal one. The physician should instruct and order the temperature of the sleeping room, especially at night, and how much time the patient should be out of doors. Food should be forced on the patient if necessary. If the patient is capable of eating three good meals a day, give some easily digested food between each two meals and at bedtime. Rest should be absolute in febrile cases, and those at the commencement of treatment for a period of one to four weeks. Exercise should be under the control of the physician. The skin should be looked after. The best plan is to dress warmly enough for indoors and to have very heavy and warm outside wraps. Sweating should be avoided when the patient is quiet. Bathing is important, and a proper hydriatic course, gradually accustoming the patient to cold applications, is advisable. A good cold rub before bedtime is often excellent. He has had patients under treatment along these lines with remarkably good results. He suggests the question whether the idea that climatic changes of the patient are advisable in the treatment of tuberculosis, has not retarded progress in the treatment of the disease. His experience seems to point to the fact that under good management, home treatment may be equally successful with that in climate resorts.

The Treatment of Pulmonary Tuberculosis by Igazol.—Preisach (*Ungarische med. Presse*, 1901, No. 23) has experimented with this method of treatment by always placing three of the patients in a room in which the fumes of igazol were liberated. The room was saturated with the drug during the afternoon and also during the night. 4 g. of igazol were used daily. Altogether ten patients were thus treated, in whom no other therapeutic measures were employed excepting a brief exposure to the air in the garden. The results obtained were as follows: Improvement of appetite and sleep, decrease of the cough and diminishment of expectoration. On the other hand the fever, the pulmonary physical signs and the bacilli in the expectoration, remained uninfluenced.

The Treatment of Pulmonary Tuberculosis by Cinnamic Acid.—H. Staub (*Korrespondenzblatt für Schweizer Aerzte*, June 15, 1901, No. 12). The experience of the author in the treatment of pulmonary tuberculosis with cinnamic acid embraces twenty cases. He states that this method of treatment with the exception of a possible disposition to hemoptysis (it occurred in ten of his twenty cases) is to be considered as safe. The remedy, however, does not favorably influence the course of tuberculosis in any way. Furthermore no visible reaction could be observed in tubercular areas such as the larynx and eye, after the injections of hetol (sodium cinnamate), neither could a leukocytosis be observed after an injection.

The Treatment of the Night Sweats of Phthisis by Tannoform.—Nolda (*Berliner Klinische Wochenschrift*, July 1, 1901, No. 26). The author's experience with tannoform in the treatment of the night sweats of phthisis according to the methods of Strasberger embraces twelve cases. Of eight cases with pronounced sweating, seven were entirely relieved from their difficulties, and most of them after three to five applications, while one case was markedly improved. In four patients with marked night sweats, and in whom the known external and internal remedies were no longer of any avail, tannoform was employed with such brilliant results, that in three the sweating disappeared entirely and in addition, curiously, the previous elevated temperature returned to normal, while in the fourth case marked improvement was obtained. Occasionally mild itching and burning of the skin ensued. It is best to rub the powder into the skin, than dust it, and it will suffice to confine the manipulations to the thorax. In the morning the areas which were treated are cleansed with brandy, and this is again repeated in the evening before the application of the tannoform in order to keep patulous the excretory duct of the sweat glands.

A Case of Tuberculous Arthritis of the Knee and its Treatment with Tuberculin R.—Brunzlow (*Deutsch Med. Woch.*, September 26, 1901) has treated successfully a tuberculous knee affecting a boy of a markedly phthisical habitus. The following rules are laid down as a result of this experience: (1) Pronounced reactions are to be avoided in the use of Tuberculin R. (2) Even moderate elevations of temperature over the average prevailing before the injections were begun are to be regarded as reactions. (3) These manifestations must be allowed to subside fully before the next injection is made, as otherwise the system may be overcharged with toxin. (4) In the course of the treatment, reactions may be produced through rapid increase of dosage or the quick succession of slowly increasing amounts; under the latter conditions, the temperature rise is apt to be slight, but persistent. (5) Successful immunization is indicated by a permanent increase in body weight, which frequently takes place with surprising rapidity; systematic observations of the weight are therefore essential.

Floor Infection of Young Children With Tuberculosis—Dieudonne states (*Münchener Med. Wochenschrift*, September 10) that fifteen children between six months and two and one-half years old, who played on the floor in poverty-stricken homes where one or both of the parents were tuberculous, were examined to determine whether tubercle bacilli could be discovered on the hands or nasal membrane. Nearly 90 guinea-pigs were inoculated and virulent tubercle bacilli were found on the hands of two of the children and in one in the nose. This is a startlingly practical illustration of the dangers of infection, and suggests the value of properly instituted hygienic measures.

DERMATOLOGY.

Treatment of Cutaneous Affections With Cold.—E. Saalfeld (*Therapeutische Monatshefte*, July, 1901) reports very favorable results from the application of liquefied air, ethyl chlorid, or a mixture of the latter with methyl chlorid. Saalfeld asserts that the prompt improvement and the convenience of this method of treatment commend it for all chronic cutaneous affections, with much infiltration, and in which it may be anticipated that resorption will follow an acute, artificially induced inflammation.

Some Points in the Management of Eczema.—Henry Waldo (*British Medical Journal*, September 21, 1901) states that in the management of eczema neither plain water nor soap must be used. It is safe to cleanse the part with rain water, with the juice of bran, starch or boiled oatmeal once every twenty-four hours. Immediate drying

with a soft towel is recommended. The addition of a drachm of soda bicarbonate or biborate to the pint of fluid is useful, if there is much exudation in the form of crust. Some antiseptic fluid may also be added with advantage. An important point is to ensure rest to the part. The sound parts of the skin should be washed daily with soap and water. The eczematous surface should always be protected by some application. Waldo does not think the kind of application is so important as the protection of the part. To a wet eczema it is often better to apply lotions, as in this way the local remedy is enabled to come in close contact with the living tissues. Internal treatment must not be ignored; the author recommends blue pill, aperients, quinine and benzo-naphthol.

Use of the Electric Light in the Treatment of Superficial Wounds.—Minin (*Vratch*, June 22, 1901) achieved remarkable results by the use of electric light in the treatment of superficial wounds, burns and a few cases of skin eruptions. The effect of electricity in these cases depends on the light and not the heat, inasmuch as the best results are obtained with the light at a considerable distance from the body. Blue light constricts the blood vessels and produces marked anesthesia, while white light has the opposite effect. The anesthesia caused by blue light is as marked as that produced by cocain, and the author employed it successfully in minor surgery. Two cases are cited in which superficial wounds were sewed up under the influence of blue light of 50 candle power, without the patient experiencing the least pain. Contusions due to falls were promptly cured by blue light. In one case, a burn of the first degree yielded to two applications of the blue light from a lamp of 50 candle power, each sitting lasting 10 minutes. In another case of injury to the mouth, throat and esophagus caused by the accidental ingestion of ammonia, several applications of the blue light accomplished a complete cure. The light was directed to the mucous membrane of the mouth and in front of the neck and chest. A case of rheumatic purpura was cured by the application of white light from a 50 candle power lamp followed for a few minutes by blue light from a lamp of 25 candle power. In another case of simple purpura 5 applications of the electric light resulted in a cure, after other remedial agents failed. The treatment also exerted a beneficial effect on the genral nutrition of the patient.

The Treatment of Eczema in Children.—Leistikow (*Monatsh. f. prakt. Dermat. Bd.* XXXI, No. 5) recommends the following ointment for the treatment of squamous eczema, especially with the mercuric oxide contained therein: Yellow oxide of mercury 0.25-0.5, oxide of zinc and starch, of each 5.0, lanolin 5.0, and liquid vaseline 10.0. In weeping eczema he employs a combination of zinc oxide and ichthyol, applied every twenty-four hours and covered with bandages. In obstinate cases which tend to recur, the author recommends pyrogallic acid in strength of from ½ to 2% and in exceptional cases 3%; as a base for this ointment he prefers casein ointment. The pyrogallic ointment is gently rubbed in with the finger; the dry crust which ensues is easily removed by means of water. The action of the casein base is also anti-pruritic.

MALIGNANT DISEASES.

The Prospect of Cure in Cancer.—Horace Manders (*The Lancet*, September 28, 1901) thinks that the great point in treatment of cancer is to fix one's attention on the natural forces inherent within the body. We have in electricity, for instance, an agent capable of directly and profoundly affecting the molecular changes that go on within the cells, increasing metabolism and resistance to adverse influences. In cancer we may not have to deal with an invading microbe, yet it is evident that some malign source is at work, whose influence the natural defensive powers of the body have become unable to resist, and it is only reasonable to infer from analogy that if these inherent powers could be revitalized to the extent that generally obtains in the equilibrium of health, as has been done in tuberculosis, then there is a definite prospect of a cure for that even more intractable disease—cancer. If these inherent powers did not exist, we should all fall victims, as it is unreasonable to suppose that we are not constantly exposed to the source of cancer, just as we are to that of tuberculosis, of which we are now well aware. It is quite possible that the ultra-violet rays of the spectrum have a distinct value in this condition. Yeast current is unreliable. The author closes with the statement that in currents of high potential and exceeding frequency we have a means, hitherto unknown, of stimulating the vital energy of cells and enabling them to utilize, by taking into their protoplasm auxiliary remedies; and that sometimes one and sometimes another, when used in conjunction with these currents, will be found to be the particular one needed.

The Intralaryngeal Treatment of Carcinoma of the Larynx.—Mat Scheier (*Allgemeine med. Centr.-Zeitung*, LXX, No. 8, 1901) quotes the variance in opinion as to the method of operation in cases of laryngeal cancer. He quotes furthermore the 34 patients operated on up to now, out of which 11 remained free from recurrences for periods from 1¼ years to 22 years; four cases had recurrences within one year. He reports a case of carcinoma keratoides of the left vocal cord, which was operated on at several sittings, each time by intralaryngeal interference, and which was completely cured in 2¾ years. He is of the opinion that when an early diagnosis of laryngeal cancer has been made, and where the tremor is sharply defined on all sides, intralaryngeal interference is justifiable. The procedure is not dangerous and yields better functional results than the external operation. Unfortunately, however, but few cases are adapted for the intralaryngeal method.

DISEASES OF THE LUNGS.

Intratrachial Injection in Bronchial and Pulmonary Affections.—W. S. Anderson (*Medical News*) discussing intratrachial injections in bronchial and pulmonary affections, concludes as follows: (1) It is of no advantage in acute bronchitis, at least during the congestive stage; (2) It is of distinct advantage in subacute and chronic bronchitis; (3) It is of positive benefit in bronchiectasis; (4) It is valuable in pulmonary tuberculosis, relieving many of the symptoms, especially those due to secondary infection; (5) It quickly relieves the distressing symptoms of asthma. The amount of relief and tne permanency depend largely upon the predisposing and exciting causes; (6) It in no way interferes with other lines of treatment; (7) The writer has never seen any harm follow its use, although in a very few instances it excited severe coughing for a short time.

Observations on the Treatment of Croupous Pneumonia.—Dr. J. C. Wilson, of Philadelphia, Pa., presented a paper on this subject before the semi-annual meeting of the Medical Society of the State of New York, October 15 and 16, 1901. After a careful study of available statistics, the author concludes that 75 per cent. of patients of all ages in hospitals recover, while the mortality rate is lower in healthy young subjects such as are found in military hospitals. In exceptional series of cases the mortality was only 1 to 2 per cent. Concerning the so-called specific treatment, the speaker pointed out that it was not reasonable to expect curative effects from a number of drugs selected because of their supposed action upon the cause of the pneumonia. In such infection as malaria, syphilis and diphtheria, it should be remembered that only one plan of medication is successful. Again, it was highly probable that at the time of the initial chill the disease process was already far advanced. Dr. Wilson said that his own plan was to apply one or two ice bags to the affected side, sponge the body night and morning with tepid water and administer calomel two or three times in the first week. Expectorants were rarely used, though sometimes aromatic spirits of ammonia or the carbonate of ammonia was prescribed. Alcohol was generally given, though except in alcoholic subjects only from four to six ounces of whiskey are given in twenty-four hours. Great stress was laid upon the use of Dover's powder, two or three grains at a dose, repeated at intervals of two or three hours during the greater part of the illness. The object was to give enough of this drug to produce slight continuous drowsiness. Where a heart stimulant was indicated, strychnia was used, with nitroglycerine at times to relieve the right side of the heart. Dyspnea was considered an indication for the use of oxygen, care being taken to dilute it largely with air. The hypodermic use of atropin was valued highly in the treatment of pulmonary edema. Delirium and a tendency to coma are treated by cold effusions to the head and neck

at intervals of a few hours. Neither poultices nor cotton jackets are allowed. The patient wears loosely fitting merino underwear. Blisters are sometimes used in cases in which resolution is delayed.

NERVOUS DISEASES.

The Treatment of Melancholia.—L. C. Bruce and H. de Maine Alexander (*The Lancet*, August 24, 1901). The authors state: "We believe melancholia to be a disease of disordered metabolism and that treatment should be directed towards increasing the excretion of waste products of this metabolism through the channels of the urinary and integumentary systems, and we mechanically accomplish this end by administering to our patients an abundant fluid dietary. By means of this treatment the blood gets rid of its overcharge of waste products and the arterial tension falls. We assist digestion by giving milk frequently, and in small quantities, as it is the most easily assimilated food. We consider the forcing of solid food (or such as custards) upon a patient suffering from acute melancholia just as injudicious treatment as would be the feeding of a patient suffering from typhoid fever exclusively on beef-steaks." They publish charts illustrating the progress of the treatment in four cases; and a weight table of the last eight cases treated. They believe that thus managed, melancholia is a disease very amenable to treatment.

The Home Treatment of the Mentally Diseased.—C. Moeli (*Berliner Klinische Wochenschrift*, July 1, 1901, No. 26) believes that the treatment of the mentally diseased in the family is possible independently, and without any connection with any institution. The households of the patients can be grouped together in one locality in the vicinity of an institution for exceptional cases. The patients will not have to run the gauntlet of prejudice as occurs in those mentally deranged, and in suitable cases this form of treatment may bring about recovery. In extreme cases the home treatment may be combined with that of the institution.

DISEASES OF THE GASTRO INTESTINAL TRACT.

The Treatment of Perityphlitis with Alcohol Compresses.—Prof. N. F. Filatow and Dr. W. J. Gold, of Moscow (*Klinisch-Therap. Wochenschrift*, 1900, No. 54, quoted in *Prager Med. Woch.*, October 3, 1901) report excellent results in the case of a twelve year old boy with perityphlitis who had been treated with alcohol compresses. The alcohol is applied on gauze pads, (double the thickness in young children), that have been saturated with 96% alcohol and covered with flannel; over this an ice bag is placed. After the evaporation of the alcohol, which occurs in about one hour, the compresses are renewed. Opium is also given internally.

The Treatment of Dysentery—A. Plehn (*Deutsch Med. Woch.*, September 26, 1901) treats dysentery in the following manner. As soon as the disease has been diagnosticated, or is even suspected, the patient is given two tablespoonfuls of castor oil. This at once removes a large amount of infectious material and cleanses the intestinal canal. On the next morning the calomel treatment is begun. Every hour a tablet of ½ grain of calomel is given until twelve tablets have been taken, when a pause is made till the next morning. The same plan is carried out on the second and third days, after which 8 grains of subnitrate of bismuth are given at hourly intervals for twelve doses daily until recovery results. During the calomel course, and for several days longer, the mouth receives careful attention. After each dose of the drug, the mouth is rinsed with a wash of rhatany or salicylic acid, and any beginning tendency to salivation is combated by scrubbing the gums with swabs saturated with the above solutions. If these precautions are taken, the treatment rarely needs to be interrupted, and stomatitis occurs only in very unusual cases of idiosyncrasy. Any tendency to constipation, which sometimes occurs even before the calomel stage is over, should be met by the use of castor oil or enemata of salicylic-acid solution, while in the later days of the treatment, mineral waters may advantageously be employed. An important accessory is the proper regulation of the diet, which should consist wholly of fluids.

Formulae.

EAR, NOSE AND THROAT.

Goddard's Rhus Gargle:

℞

Pomegranati corticis	ʒ ss
Rosae gallicae foliarum	3 ij
Aquae bullientis	f. ʒ vi
Infusa cola, et adde	
Melis pureficati	f. ʒ j
Aluminis	3 ii

M. S.:

Nasal Catarrh.—Sajous (*Medical Record*, September 28, 1901) recommends the following:

℞

Bismuthi subcarbonatis	
Pulveris talci	āā 3 i
Exsiccati aluminis	3 ss
Morphinae acetatis	gr. i
Acaciae	f. 3 i

M. S.: Use as a snuff.

Acute Tonsillitis.—(*Medical Record*, September 28, 1901, from *Medical Times and Hospital Gazette*):

℞

Quininae sulphatis	gr. xlviii
Acidi muriatici diluti	
Tincturae aconiti	āā *m* xlviii
Syrupi pruni virginianae	f. ʒ i
Aquae	q. s. ad f. ʒ iii

M. S.: Teaspoonful every four to six hours for an adult.

Catarrhal Aphonia.—(*The Medical Fortnightly*, September 25, 1901, from *New York Medical Journal*):

℞

Sodii benzoatis	3 iss
Alcoholaturae aconiti	*m* xx
Aquae ranrocerasi	*m* xxxxv
Syrupi tolutani	
Syrupi codeinae	āā f. ʒ j
Aquae	f. ʒ ii

M. S.: To be taken in four equally divided doses in the twenty-four hours. A dry compress of cotton, retained with a flannel bandage, should be applied to the throat during the night.

Tonsillitis.—G. L. Richards (*The Medical Fortnightly*, September 25, 1901, from *International Journal of Surgery*):

℞

Tincturae aconiti	*m* 1/5
Hydrargyri ovidi rubri	gr. 1/100
Tincturae belladonnae	*m* 1/10
Tincturae bryoniae	*m* 1/10

M. et dividi in tablet No. 1.
S.: To be used in the early stages of acute affections.

DIGESTIVE TRACT

Gastric Atony.—(*Canada Medical Record*, August, 1901):

℞

Liquoris potassii arsenitis	f. 3 ss
Tincturae nucis vomicae	f. 3 i
Aquae aurantii	q. s. ad 3 vi

M. S.: A dessertspoonful in water after each meal.

For the Diarrhea of Typhoid Fever.—H. A. Hare (*Miss. Medical Record*, September, 1901):

℞

Acidi sulphurici aromati	3 i
Extracti hematoxyli fluidi	f. ʒ ss
Spiritus chloroformi	f. ʒ ss
Syrupi zingiberis	q. s. ad f. ʒ iii

M. S.: Two teaspoonfuls every two to four hours.

Diarrhea, Obstinate.—Constatt (*The Canada Lancet*, September, 1901):

Argenti nitratis	gr. i to ij
Pulveris opii	3 j
Sacchari	ʒ i
Aquae destillatae	f. ʒ viii

M. S.: A teaspoonful every two or three hours.

Gastric Fermentation—Ewald (*Medical Record*, September 28, 1901):

℞

Resorcin resublimatis	gr. lxxv
Bismuthi salicyliati	
Pulveris rhei radicis	
Sodii sulphatis	āā 3 iiss
Sacchari lactis	ʒ ss

M. S.: One-half teaspoonful twice daily.

Gastric Fever.—G. T. McCullough (*Medical Record*, September 28, 1901):

℞

Spiritus chloroformi	f. 3 i
Bismuthi subnitratis	ʒ iss
Morphinae sulphatis	gr. i
Elixirii lactopeptine	f. ʒ i
Aquae menthae piperitae	q. s. ad f. ʒ ii

M. S.: One-half drachm every half hour if necessary.

Fetid Diarrhea.—Tomkins (*The Kansas City Medical Record*, September, 1901):

℞

Hydrargyri chloridi mitis	10 ctgs
Zinci sulpho-carbolat.	15 ctgs
Bismuthi subnitratis	8 gm
Lactopeptine	2 gm

M. et dividi in chart No. xii.

S.: Three a day for a child one year old.

Habitual Constipation.—(*Jour. Amer. Med. Assoc.*, September 21, 1901):

℞

Sulphuris loti	ʒ j
Potassii bitartratis	ʒ j
Pulveris sennae	3 iv
Syrupi rhei	
Extracti cascarae sagradae fluidi	āā f. 3 ij

M. S.: A teaspoonful at night to move the bowels.

CHILDREN'S DISEASES.

Pertussis.—Roth (*Medical Record*, September 28, 1901):

℞

Acidi carbolici	gr. xv
Spiritus vini	3 ss
Tincturae iodi	*m* x
Tincturae belladonnae	f. 3 ss
Aquae menthae piperitae	f. ʒ iii
Syrupi opii	f. 3 iiss

M. S.: Teaspoonful every two to three hours.

Emetic for Children.—(*Medical Record*, October 5, 1901):

℞

Pulveris ipecacuanhæ	gr. viiss
Antimonii et potassii tartratis	gr. 1-6
Aquae destillatae	q. s. ad. f. ʒ i

M. S.: Teaspoonful every 15 minutes.

Catarrh of the Bile Ducts with Jaundice.—Farquharson (*Medical Record*, October 5, 1901):

℞

Ammonii iodidi	3 i
Liquoris potassii arsenitis	*m* xxx
Tincturae calumbæ	f. 3 iv
Aquae destillatae	f. ʒ iss

M. S.: Teaspoonful before each meal.

NEURALGIA AND ALLIED DISEASES.

Rheumatism.—(*The Monthly Cyclopedia of Practical Med.*, September, 1901, form *Med. Bulletin*):

℞

Potassii bromidi	3 ij
Potassii iodidi	
Chloral hydratis	āā 3 ij-3 iij
Glycerini	
Syrupi sarsaparillae	āā f. ʒ ij
Olei gaultheriae	f. 3 ij
Aquae	f. ʒ iv

M. S.: A teaspoonful four times a day, after meals and at bed time.

For Painful Joint Affections.—T. H. Manley (*N. E. Medical Monthly*):

℞

Acidi salicylici	3 iii
Tincturae opii	f. 3 jss
Olei terebinthinae	f. ʒ j
Olei olivae	f. ʒ ij
Alcoholis	q. s. ad f. ʒ vi

M. S.: Use locally on the joints.

Sciatica.—B. W. Richardson (*The Canada Lancet*, September, 1901, from *The Asclepaid*). The following formula for the relief of pain in sciatica, acute or sub-acute, is the most effective:

Pulveris opii	
Pulveris ipecacuanhae	āā gr. xii
Sodii salicylici	3 iss
Extracti casacarae fluidi, q. s.	

M. et fiant in pilulae No. xii.

S.: One or two at a dose.

Sciatica.—C. L. Dana (*The Canada Lancet*, September, 1901):

Olei gaultheriae	
Olei terebinthinae	āā f. 3 iv
Syrupi acaciae	f. ʒ ij
Aquae cinnamoni	f. ʒ i

M. et fiat in emulsion.

S.: Give a teaspoonful three or four times daily.

Liniment for Rheumatism.—Palmer (*Miss. Medical Record*, September, 1901):

℞

Olei gaultheriae	
Olei olivae	
Linimenti saponis	
Tincturae aconiti	
Tincturae opii	āā f. 3 ii

M. fiant linimentum.

S.: Apply freely and cover with cotton batting.

Chronic Rheumatism.—Fothergill (*Miss. Medical Record*, September, 1901):

℞

Acidi arsenosi	gr. iii
Pulveris guaiaci	3 iii
Pulveris capsici	3 ss
Pilulae aloes et myrrhae	3 iii

M. et dividi in pilulae No. cxx.

S.: One pill twice daily

Toothache.—(*The Monthly Cyclopedia of Practical Medicine*, September, 1901, from *Ohio Dental Journal*):

℞

Olei caryophylli	
Olei cajuput	āā x
Chloroformi	
Spiritus aetheris	āā v
Menthol	iij
Camphorae	i

Dissolve.

S.: For application to the tooth.

SKIN DISEASES.

To Prevent Pitting in Smallpox (*Merck's Manual*, 1901):

℞

Ichthyol	f. ʒ j
Lani	f. ʒ v
Unguenti aquae rosarum	f. ʒ iv

M. S.: Rub in well over the entire body twice daily.

℞

Sodii salicylici	f ʒ j
Acidi carbolici	gr. xxx
Lani	f. ʒ vii
Aquae rosarum	f. ʒ j

M. S.: Use on body (especially the face) twice a day and apply on lint.

A Lotion for Erysipelas.—J. Hays (*The Charlotte Med. Jour.*, September, 1901, from *Journal de medecine de Paris* for May 19th):

℞

Acidi carbolici		
Tincturae iodi	āā	f. ʒ ss
Alcoholis		f. ʒ i
Olei terebinthinae		f. ʒ j
Glycerini		f. ʒ iss

M. S.: For external application. Every two hours the erysipelatous parts may be painted with this liquid, as well as a small zone of the surrounding healthy tissues, and the whole covered with aseptic gauze.

Lotion for the Skin.—(*Kansas City Medical Record*, September, 1901).

Olei rosarum	gtt. xv
Glycerini	f. ʒ i
Spiritus myrciae fluidi	f. ʒ iii
Olei cajuputi	gtt. xx

M. S.: To be used on the hands every night before going to bed; and in cold weather to be applied before going out into the open air, the hands being first washed and dried.

Chilblains.—(*Medical News*, October 5, 1901, from *Le Progrès Medical*):

℞

Liquoris plumbi subacetatis		f. ʒ ij
Bismuthi subnitratis		ʒ ij
Vaselini		
Lanolin	āā	ʒ iij

M. S.: Use externally.

Furunculis of the Ear.—(*The Kansas City Medical Journal*, September, 1901):

℞

Zinci oxidi	ʒ j
Acidi carbolici	gr. x
Vaselini albi	ʒ j

M. S.: To be used as a tampon once a day.

Treatment of Blood-Poisoning.—J. B. Sloane (*The Medical Standard*, September, 1901, from *Merck's Archives*), relates a number of instances in which sepsis was promptly arrested by the local application of the following mixture:

℞

Tincturae opii		f. ʒ iv
Extracti aconiti fluidi		f. ʒ ii
Extracti belladonnae		f. ʒ iv
Extracti veratri viridis		f. ʒ iii
Ichthyol	q. s. ad	f. ʒ iv

M. S.: To be used locally.

To Prevent Sore Nipples.—(*Jour. Amer. Med. Assoc.*, September 28, 1901):

℞

Tincturae benzoini compositi	f. ʒ ss
Olei olivae	f. ʒ ij
Lanolin	f. ʒ vi

M. S.: To be applied after nursing, three or four times a day.

Ointment for Varicose Veins.—(*Canada Medical Record*, August, 1901):

℞

Acidi carbolici	ʒ ss
Acidi borici	ʒ iiss
Camphorae	ʒ ii
Ichthyol	ʒ v
Olei amygdalae dulci	f. ʒ iiss
Unguenti zinci oxidi	ʒ iiiss

M. S.: Apply externally night and morning.

Fissures of the Nipples.—B. C. Hirst (*Jour. Amer. Med. Assoc.*, September 28, 1901):

℞

Iodoformi		gr. x
Unguenti zinci oxidi		ʒ ss
Ichthyol		f. ʒ j
Lanolin		
Glycerini	āā	f. ʒ iss
Olei olivae		f. ʒ iiss

M. S.: Apply night and morning.

Abortive Treatment of Boils.—Jorrissene (*The Kansas City Medical Journal*, September, 1901):

℞

Hydrargyri oxidi rubri	ʒ j
Lanolin	ʒ x

M. S.: To be rubbed in once or twice a day.

Burns of the First Degree.—(*Jour. Amer. Med. Assoc.*, September 21, 1901):

℞

Acidi acetici diluti	ʒ i
Glycerini	ʒ j
Bismuthi subnitratis q. s. ad.	unguentum

M. S.: Apply to the affected part.

RESPIRATORY TRACT.

Asthma.—(*Medical News*, October 5, 1901, from *Le Progrès Medical*):

℞

Decoti senegae		f. ʒ iv
Tincturae labeliae		
Tincturae opii camphoratae	āā	f. ʒ j
Potassii iodidi		ʒ iiss

M. S.: Teaspoonful three times a day.

Cough in Phthisis.—(*Miss. Medical Record*, from *Medical Record*, August, 1901):

℞

Camphorae	gr. ii
Heroin hydratis	gr. 1/12
Creosoti	*m* i

M. fiat pilulae No. i.

S.: One when necessary.

In Spasmodic Asthma.—Bartholow (*Miss. Medical Record*, August, 1901):

℞

Potassii bromidi	ʒ i
Potassii iodidi	ʒ ss
Aquae	f. ʒ iv

M. S.: A teaspoonful in sufficient water every half hour or hour.

Hemoptysis.—A. Hecht (*Medical Record*, September 28, 1901):

℞

Extracti ergotæ		ʒ ss
Pulveris digitalis foliarum		
Extracti hyoscyami	āā	gr. xx
Quininae sulphatis		ʒ ss

M. et fiant pilulae No. xx.

S.: Three to five pills daily.

Asthma.—(*The Kansas City Medical Record*, September, 1901, from *Louisville Medical Monthly*):

℞

Codeinae sulphatis		gr. ij
Vini antimonii		*m* xl
Spiritus ammonii aromatici		f. ʒ j
Spiritus aetheris compositi		f. ʒ iv
Aquae menthae piperitae	q. s. ad	f. ʒ ii

M. S.: Two teaspoonfuls as required.

MISCELLANEOUS.

Gonorrhoea.—Dokeschaieff (*Medical Record*, October 5, 1901):

℞

Bismuthi subgallati		
Pulveris acaciæ	āā	ʒ ii
Aquae destillatae		f. ʒ iii

M. S.: Use as injection every 2 hours.

℞

Cabah (*Medical Record*, October 5, 1901):

Plumbi acetatis		
Acidi tannici		
Zinci sulphatis		
Cupri sulphatis	āā	gr. ii

M. fiat tabella No. i.

S.: One tablet in four ounces of water, and use as an injection.

Treatment of Inebriety.—(*The Clinical Review*, September, 1901): Drinking and smoking should be stopped. For at least three weeks the following should be used:

℞

Tincturae nucis vomicae	f. ʒ i
Tincturae capsici	f. 3 i
Tincturae cinchoninae rub.	f. ʒ v

M. S.: One teaspoonful three times a day, increasing twenty drops daily until one-half ounce.

Varicose Veins (*Merck's Manual*, 1901):

Barii chloridi	3 ss
Ichthyol	f. 3 ij
Olei rosarum	gtt. v
Olei olivae	f. 3 v
Lani	f. 3 vi

M. S.: Apply three times a day and bandage.

Cathartic Lemonade.—(*Medical Record*, September 28, 1901, from *Northwestern Lancet*):

℞

Sodii phosphatis	3 viss
Spiritus limonis	*m* xv
Syrupi simplicis	f. 3 ii
Aquae destillatae	q. s. ad f. ʒ x

M. S:. Take at once.

Mouth Wash for Sweetening the Breath.—(*The New York State Journal of Medicine*):

℞

Acidi salicylici	
Sodii bicarbonatis	āā grs. xv
Spiritus vini rectificati	f. 3 i
Spiritus menthae piperitae	gtt. x
Aquae	f. ʒ iv

M. S.: Teaspoonful in a small cupful of hot water.

Squamous Blepharitis.—Saucassani (*Medical Record*, September 28, 1901):

℞

Sulphur praecipitatis	gr. xv
Acidi salicylici	gr. ii
Resorcin	gr. ii
Vaselini	
Lani	āā 3 iss

M. S.: Apply at night.

Or,

℞

Sulphur praecipitatis	gr. xv
Spiritus camphorae	*m* xxx
Aquae rosarum	
Aquae destillatae	āā f. 3 iiss

M. S.: Apply at night.

Sulphur Dressing.—(*Medical Record*, September 28,1901):

℞

Sulphur sublimati	lbs. iv
Bismuthi subnitratis	ʒ xii
Essentiae cinnamoni	f. 3 x

M. S.: Triturate the ingredients thoroughly. The sulphur should be sterilized thoroughly by boiling in a bag before mixing.

Secondary Anemia.—Blackwood (*Jour. Amer. Med. Assoc.*, September 21, 1901):

℞

Euquininae	3 j
Ferri lactatis	3 ij
Liquoris acidi arsenosi	f. 3 iss
Tincturae lavendulae compositae	f. ʒ ss
Elixirii aurantii	f. ʒ ix

M. S.: One teaspoonful four times a day in water.

In Threatened Mastitis.—(*Jour. Amer. Med. Assoc.*, September 21, 1901):

℞

Ichthyol	
Unguenti hydrargyri	
Unguenti belladonnae	
Cerati plumbi subacetatis	

M. S.: Apply locally three times a day.

Diabetes Mellitus.—Marcus (*Medical Record*, September 28, 1901):

℞

Acidi arsenosi	gr. xl
Pulveris opii	gr. lxxx
Ammonii muriatis	gr. ccc

M. fiant in pilulae No. cccxx.

S.: One pill three times a day.

J. C. Wilson also recommends the following:

℞

Codeinae sulphatis	gr. vi
Extracti nucis vomicae	gr. iii

M. fiant pilulae xxiv.

S.: One three times a day.

Treatment of Hemorrhoids.—(*The Medical Fortnightly*, September 25, 1901):

℞

Chloretoni	gr. xlviii
Adipis benzoatis	q. s. ad ʒ i

M. S.: Apply locally.

Also:

℞

Chloretoni	gr. xlviii
Olei olivae	f. 3 iiss
Lanolin	q. s. ad 3 i

M. S.: Apply locally night and morning after first cleansing the parts well.

Also:

℞

Chloretoni	gr. xxiv
Lanolin	3 iiiss
Olei olivae	f. 3 iii
Liquoris extracti hamamelidis	f. 3 i

M. S.: Apply locally.

To Prevent Bed Sores.—(*The Kansas City Medical Record*, September, 1901, from *Forbes, Md., Medical Journal*):

℞

Aluminis	ʒ ss
Sodii chloridi	ʒ ss
Aquae	
Alcoholis	āā Oj

M. S.: Use twice a day locally.

Insomnia of Hysteria.—(*Jour. Amer. Med. Assoc.*, September 21, 1901):

℞

Potassii bromidi	3 iv
Chloralis hydratis	3 iij
Tincturae asafoetidae	
Syrupi simplicis	āā f. 3 iv
Aquae destillatae	f. ʒ vi

M. S.: A tablespoonful every 3 hours until sleep is produced.

Book Notices.

The "Therapeutic Monthly" acknowledges the receipt of the following publications. A review will shortly appear in the journal.

Materia Medica, Pharmacy, Pharmacology and Therapeutics. By W. Hale White, M. D., F. R. C. P., Physician to and Lecturer on Medicine at Guy's Hospital, London; Author of a Text-Book of General Therapeutics. Edited by Reynold W. Wilcox, M. A., M. D., LL. D., Professor of Medicine and Therapeutics at the New York Post-Graduate Medical School and Attending Physician to the Hospital; Visiting Physician to St. Mark's Hospital; President of the American Therapeutic Society; Fellow of the American Academy of Medicine, etc. Fifth American Edition, thoroughly revised. Published by P. Blakiston's Son & Co., 1012 Walnut St., Philadelphia. 1901. Price, $3.00 net.

Diagnostics of Internal Medicine. By Glentworth Reeve Butler, A. M., M. D., Published by D. Appleton & Co., New York. A Clinical Treatise Upon the Recognized Principles of Medical Diagnosis, prepared for the use of Students and Practitioners of Medicine

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T. MELLOR TYSON, M. D., }

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The Action of Arsenic on the Skin.—The recent epidemic of arsenical poisoning in Great Britain, due to beer drinking, has afforded a number of observers the opportunity of studying the action of arsenic upon the tissues of the human body. The *British Journal of Dermatology* for April, 1901, contains a valuable article on this subject by Brooke and Roberts. They state that the usual phenomena found were swelling and heat and pain in the hands and feet, which were reddened in color. The skin of the palms and soles became thickened. Disturbances of sensation were present in the form of hyperesthesia or numbness, and there was often hyperidrosis. The lesions were not limited to these extremities, but often spread upwards, involving the wrists and ankles. The face was swollen in a certain percentage of the cases, but not in all, and the eyes were watery. Their contribution is of especial interest in the fact that it deals at length with the action of arsenic upon the skin. On the body and limbs scarlatiniform rashes, or diffuse erythodermia, appeared, which terminated in desquamation and a dirty discoloration. In a few cases blotches of bright red color covered the trunk and limbs. The hands and feet were usually first affected, but at times this was preceded by desquamation and deep pigmentation of the trunk. There were usually slight symptoms of peripheral neuritis, and itching was common. They observed that the hyperkeratosis and pigmentation were often marked by the phenomena of erythema, and closely associated with nervous phenomena. They found that herpes was not common, and that the remaining symptoms were usually slight, especially diarrhea, gastric pain and the smarting of the conjunctiva. They make the interesting observation that when the erythema was slight, the nervous symptoms tended to be severe. They divide the symptoms into those due to the action of the poison, (1) on vasomotor centres, (2) on nerve trunks or terminations, (3) on the nutrition of the skin and other tissues, and (4) on the blood and blood-forming organs. The arsenic was probably present, in the beer which these patients drank, in the form of arsenic acid and the arsenates, and they explain the frequent absence of the gastro-enteric symptoms by the fact that these preparations are less irritating to the intestinal mucous membrane than arsenites. It has been demonstrated that the intestinal mucous membrane converts arsenious acid at the expense of the tissues into arsenic acid, and reduces the latter again to arsenious acid. The hypothesis is that the effects of arsenic on the animal tissues result from the development of active oxygen. The authors inquire whether the development of ozone within the tissues of the skin is the direct cause of the morbid changes. They show that the epithelium has an extraordinary affinity for arsenic, and that the essential changes produced in it are not of an inflammatory nature but nutritive. It appears that in the earlier stages the epithelial tissue presents almost a condition of well-being, while later degenerative changes appear, which still later pass into atrophy. They explain this by assuming that the cells having been stimulated by a normal physiological stimulus (oxygen) to the point of exhaustion, and beyond their reparative power. They prove further that the epithelia of the sebaceous glands remain healthy, and the oxides of arsenic have been shown to undergo no change in the presence of fat. Their paper contains much accurate observation and is of interest in furnishing us with a large number of clinical data which add a great deal to our knowledge of the subject. Especially interesting is their statement that the relation of arsenic to the tissues is determined by the cells themselves. If these cells decompose the oxide, liberating oxygen, or part with oxygen to the arsenious acid (the respiratory property of arsenious acid) the therapeutic or toxicological effects of arsenic are obtained. When the liberation of oxygen is slow, a formative tendency results, when it is unduly rapid, the bodily cells are hurried to exhaustion and death. They are of the opinion that the recent epidemic supports the view that the effects of arsenic are due to the development of active oxygen within the system, which they express by stating that its action is thus entirely dynamic and consists in altering the ratio of oxygen to the tissues.

The Problem of the Employment of New Remedies.—As we have before stated in these columns, and the fact is generally admitted, one of the greatest problems with which the profession, as a body, has to deal, is the determination of the value of the great number of new remedies which are placed upon the market. In an editorial dealing with a phase of this subject, the *Practitioner*, for November, 1901, says:

"It is the guiding principle of scientific therapeutics to try all things and hold fast to that which is good. It is to the interest of the medical profession to keep an open mind in regard to new remedies, and indeed it has a tendency to be too easily carried away by winds of doctrine—or advertisement—in this matter. Doctors are constantly on the outlook for new remedies and anything which appears to have any usefulness in it is at once tested, not by one or two lovers of novelty, but all over the world. The tests are made publicly, and the results are published in the recognized professional organs. There is no appearance of secrecy, no stipulations that the discoverer himself shall conduct the test. A remedy that cannot be trusted to work except in the hands of its originator is obviously useless to the profession, even if it be genuine. Nor can it be of service to mankind at large, unless the one and only administrator can multiply himself with the rapidity and prolificity of a microbe."

We quote these words because they may be said to represent an intelligent expression of opinion of a member of the profession who has not devoted himself especially to the study of this subject, but one who has looked upon it, after superficial study of its many phases, as a problem of serious importance. We have in our Pharmacopeia a host of remedies, the majority of which are of recognized value, and empirically, at least, there is a great deal to be said in favor of their employment. The practitioner of medicine in his student days is made familiar with the drugs of the Pharmacopeia, and especially with the most useful of them. But when he enters upon practice there is no constantly exploiting to him the official preparations either by personal canvass or by advertisements in the medical journals. As a result he is tempted to deviate from the armamentarium which this volume affords, and take up from time to time many of the unofficial preparations, and his results with these will vary, depending upon whether he has used some that are undeniably useful or some of the many that are quite worthless. The large drug houses of the world are doing a great amount of scientific work, and the doctrine of the survival of the fittest promises that only the good of these many new preparations will finally survive the test. But the question arises, since so many of the new preparations are of no recognized value, what untold harm a physician is doing his patients in employing those agents which are comparatively unknown and whose action seems to be based upon purely empirical employment. Reading the reports of many preparations which appear from time to time in a large number of our medical periodicals, we are struck with the insincerity of many of them, and the faulty conclusions and illogical reasoning which is employed in the endeavor to show that this or that preparation has decided virtues. In other words, to the profession it is not a simple matter to differentiate between what is good and what is useless of these new drugs, nor is it wise to be ultraconservative and refuse to accept any of those preparations not as yet sanctioned by the Pharmacopeia. We have decided need of some professional action by which medical men shall be enabled to pass upon the virtue of all new drugs, and give to the deserving preparations the seal of their approval. Without this stamp of approval medical men would then be safe in not employing any agents no matter how much exploited. In a previous issue we spoke of the proposed National Bureau of Materia Medica which would have this function, and it seems to us, notwithstanding the vast difficulties of the successful inauguration and carrying out of this plan, that it would do so much good to the profession as to be well worth the labor, and it would be undeniably welcomed eagerly by all the representative manufacturers, who would be only too glad to have their preparations carefully investigated. It would prevent the charlatanism among the, fortunately few, commercial houses who are doing business at the cost, not only of the profession, but of the vast number of thoroughly honest and reliable drug houses as well.

Schools for the Insane.—The late Dr. Francis M. Hamlin, who for the last few years of his life was in charge of a school for insane patients at the Willard State Hospital, Willard, New York, was the author of a paper published in the July number of the *American Journal of Insanity* on "Schools for the Insane." The idea of teaching the insane seems to have originated in the two famous institutions of France, the Bicêtre and Salpêtrière. Dr. John Conolly, whom he quotes, presented a paper on this subject in the *British and Foreign Medical Review*, in 1845, in which he describes the methods in vogue in these two great institutions. He believes that the chief value of such schools is, that the patients are taught self-control and concentration of thought, and from his experience as a teacher he believes that if he has been able to secure concentrated and continuous thought on some wholesome topic, that he has done far more for his patient than to teach him to parse a sentence. An illustration of the manner in which the school is conducted is as follows:

A teacher goes to the piano, selects a song, perhaps several are played before the right one seems to have been chosen, and when this is hit upon, the pupils' faces brighten and it is sung with spirit. The singing over, the newspapers are read, and each patient is encouraged to seek out and bring items before the school. Sometimes the school session is passed without a book being opened. Politics and religion are the only topics excluded. Facts relating to either are permitted, but no arguments. He narrates the experience of a patient of some 30 years, of refined and cultivated appearance, who could not be induced to take part in the sessions of the school and whose face was one of the saddest he had ever seen. She was unable to read or spell, although she was formerly a teacher. Finally, Dr. Hamlin induced her to join the spelling exercises. He examined her paper after it was over, and to his great satisfaction found it correct. After this time the patients face seem to brighten and hope was re-established, and in three or four weeks, states the doctor, she seemed fully restored. He acknowledges that such an outcome as this is extremely rare, but he believes that the establishment of schools for the insane will accomplish great good and make the lives of these patients far more contented.

Systematic Cold Bathing in the Treatment of Enteric Fever.—The Brand method of systematic cold bathing in enteric fever comprises the largest portion of the therapeutic treatment in that disease at the present time. Notwithstanding that the reduction of mortality has been markedly conspicuous since the introduction of systematic cold bathing, we fear that there are still some who detract from its usefulness by the application of theoretical and unsupported limitations. But statistical arguments are the strongest of all, and no qualifications can in the slightest degree now influence certain self-evident principles to which a formidable and incontestable array of statistics has given birth. Statements are frequently made to the effect that in the experience of some the mortality has been low in spite of the abstinence from the Brand treatment. But we fear that the number of cases coming under the observation of those who place themselves on record with such claims, is too small to warrant a scientific opinion as to the value of a therapeutic procedure like the one under consideration. When we consider the statistics of F. E. Hare of Brisbane, Australia, who in 1902 cases of enteric fever had but 7.5% of mortality in cases treated by cold bathing, in contradistinction to a mortality of 14.8% in 1828 cases not so treated, and especially if we consider that Wilson and Salinger of Philadelphia showed a mortality of 7.42% among 1904 cases treated by the Brand method, we are confronted with the results based upon the extensive experiences of recognized clinicians, upon which we may act with impunity. Furthermore these statistics are supported by many other equally distinguished authorities, such as Osler, Tyson, Sydney Phillips, Bäumler, Curschmann, and many others. The fact should not be lost sight of that the treatment of enteric fever with systematic cold bathing is a distinct therapeutic procedure in itself, and not to be considered simply either as an intensification of milder hydrotherapeutic measures, or as the severest step of a graduated bath. Contraindications are hemorrhage, perforation, peritonitis or collapse. There are, however, some who believe that slight evidences of hemorrhage do not contraindicate employment of the Brand method, and some who refrain from the procedure during menstruation and pregnancy. It is an interesting fact to note as F. E. Hare himself states, that "in no case has a bronchitis been set up, nor has one that was pre-existent been intensified". It seems that the fear of pulmonary complications and especially pneumonia, has been the chief intimidator, and hence has influenced many who would otherwise have become followers of Brand, and yet pneumonia represents the pulmonary affection whose occurrence as a complication in enteric fever has been minimized by the cold bath. The many good effects of the Brand treatment are too well known to require repetition here, except that we feel that the striking advantages resulting from its employment for ameliorating the nervous phenomena will well bear repetition.

The Treatment of Croupous Pneumonia.—While the treatment of croupous pneumonia here and there may vary according to the individual fancy of the physician, modern therapeutics teaches us that there are as yet no measures at our disposal that will either abort the disease or shorten its course. These facts are substantiated by the experiences of Pel, Wilson, Osler and others. The temptation for the young practitioner to concentrate his recently acquired therapeutic resources upon a case of croupous pneumonia, is great, but he will soon learn that as a well directed rifle balle is superior to a promiscuously expended load of shot, so the well directed application of therapeutic measures in response to definite indications is superior in the treatment of croupous pneumonia to any other mode of procedure. The systematic administration of some form of opium, preferably the Dover's powder, has been found to be a great comfort to the patient,

whom it frequently places in a state of mild, comfortable somnolence. Cardiac depressants such as aconite and veratrum viride are to be most cautiously employed, if at all, not only because of their depressing effect upon a heart, whose strength is already being tried by impediments in the lesser circulation, due to the consolidation, but also because it is probable that the disease has already definitely invaded the pulmonary structure when it is clinically recognized. It is becoming more and more acknowledged that digitalis should be administered in croupous pneumonia only in response to definite indications, and not as a routine measure, a law, which should govern its employment in all cases. Promiscuous feeding and forced nourishment are as often detrimental to the successful course of the disease as promiscuous and forced drugging.

The cotton jacket is another overestimated favorite, and one would suppose from some of the benefits claimed for it, that its material contained some specific against the disease. In the poultices we find another remnant of the older therapy, which becomes an annoyance to the patient from the time that its comparatively ponderous weight falls on the chest, until, upon cooling, it becomes soggy, hard, and an irritating foreign body. Antipneumococcic serum has as yet yielded little, although it promises much for the future. Aufrecht's alleged reduction of mortality of croupous pneumonia by the administration of quinine deserves consideration, but still more extensive observations will be required to establish its therapeutic efficiency in croupous pneumonia. Free venesection when promptly and opportunely instituted, but only in response to definite indications, not only relieves a laboring and distended right heart, but mechanically removes a definite amount of pneumotoxins. The administration of coal tar products for their antipyretic effects is to be condemned, for while they do reduce temperature by their influences upon heat-production and heat-dissipation, they tend to lower the patient's powers of resistance. A frank, decided fever in croupous pneumonia is a necessary evil not to be tampered with.

The application of cold in the form of ice bags is valuable for the relief of localized pain, but in case of croupous pneumonia of uncertain efficacy in controlling the inflammatory process. The physician who can resist the temptation to combat croupous pneumonia with a formidable array of medicaments, will for the present at least find his results more satisfactory than the one pursuing an opposite course.

Original Articles.

THEORIES ON THE ACTION OF ORGANIC MEDICAL SUBSTANCES AND THE RELATION OF CHEMICAL CONSTITUTION TO ACTION.

By J. W. WAINWRIGHT, M. D.,
of New York.

We know that there exists among the inorganic compounds certain definite relations between their molecular weight, behavior under spectrum-analysis within certain series and physiological action. In particular it is distinctly apparent that substances with isomorphous combinations have a very similar action in comparison with one another.

The physical supposition that the action of the elements corresponds to their circumstances of motion and vibration has been extended by Curci to the inorganic compounds to this extent, that he maintains the action of an organic molecule depends upon and results from the action of its single components. Thus carbon has a paralyzing, hydrogen an exciting and oxygen an indifferent action. The hydrocarbons of the fatty and aromatic series are paralyzing groups, because the action of the carbon overwhelms that of the hydrogen, which is naturally antagonistic. The more carbon and the less hydrogen in a compound, the greater its paralyzing action, and vice versa. In groups which contain hydrogen and nitrogen, the exciting action of the former preponderates over the weakly paralyzing action of the nitrogen. In the hydroxyl groups the hydrogen has a considerable exciting action, because the oxygen is indifferent; it therefore follows that hydroxylized hydrocarbons must have a double action. On the one hand, the hydroxyl element excites; on the other, the hydrocarbon element paralyzes. According to Curci's comprehension, however, the hydroxyl exerts a special action. These results of Curci, which may be accounted for on other grounds, represent the crudest attempt to establish a connection between chemical constitution and biological action. The conditions, however, are not so simple as he claims.

In regard to the aliphatic substances, we are indebted above all to Schmiedeberg for a series of explanations. The efficacy of substances, and especially of the aliphatic series, depends above all on physical and biological conditions. Thus the absorbability of a substance plays a prominent part. A substance which cannot be absorbed is self-evidently unable to act within the organism. Further, great solubility in water, and great volatility at ordinary temperature, must modify the action of the substance. Thus the volatile hydrocarbons of the petroleums show to a complete extent the narcotic group-action of the hydrocarbons, while the fluid members of the same, being quite insoluble in water and incapable of evaporation—the paraffine oils and solid paraffine—are entirely inert. The efficacy of the alcohol group, i. e., the narcotic action, *is essentially conditioned by the number of oxygen atoms contained in the molecule.* All combinations of this group which contain two or more oxygen atoms in a hydrocarbon group, lose their efficiency either partly

or entirely. The glycols stand at the limit of efficiency. If, however, there is a combination of several independent hydrocarbon groups, it is efficacious if none of the combined molecules possesses over *one* atom of oxygen, or contains none at all. Thus the hypnotic paraldehyde may be regarded as a combination, the molecule of which is made up of three inferior molecules, each of which contains but one atom of oxygen in loose combination, each of which exerts an independent rôle. Schmiedeberg interprets the action of the substituted bodies as follows:

1. Very poisonous atomic groups lose the intensity and original character of their action upon substitution of the hydrocarbons of the fatty series. This behavior is shown in nitrile and isonitrile, one of which is to be regarded as a direct substitution product of hydrocyanic acid. Only when the latter is formed by decomposition within the organism does the characteristic action set in.

Examples: Cacodyle oxide=As $(C H_3)_2$ O As $(C H_3))$ can be prepared from arsenic acid anhydride by substitution of 1 atom each of O by $(C H_3)_2$. It possesses no arsenic action, which appears only after the decomposition of the oxide in the body. Plumbic and stannic triethyls and probably all other analogous substances behave in the same manner.

2. Vice versa, the efficicacy of the hydrocarbon group is weakened or entirely abolished by combination with other atoms and complexes. Here belong the ammonia-bases of the fatty series. The action of the methylamines has the same basic character as that of ammonia. They do not produce narcosis.

3. When the combination—as in ethers and esters is composed of two atom groups united by oxygen, the action of the molecule, as far as can be determined depends on the nature and quality of the two components, each of the latter playing an independent rôle. If the two portions consist of hydrocarbons of the same equivalence, as is the case in the simple and compound ethers, the action of the entire combination is single and the latter belongs pharmacologically to the typical members of the alcohol group. With these should be associated those esters in which the acids in a neutralized condition, especially as sodium salts, exert no specific action. The acetic acid ester and its homologues are therefore to be reckoned in with the alcohol group.

If, on the other hand, the acid in such combinations is poisonous or exhibits any particular behavior within the organism, these qualities also appear in the corresponding esters, and determine an essential deviation as to action in respect to the fundamental character of the alcohol group. As an example, the nitric acid amyl ester will serve.

A stringent proof that an intimate connection exists between the chemical constitution of substances and their physiological action, and that the latter is conditioned by the former is furnished by the fact that definite changes in the constitution produce definite changes in the action in substances similar in character; and that, further, the arrangement of definite molecular complexes in various active substances may be transformed into active and inactive bodies of the same nature.

It is easily possible to transform a specially active substance into an inert one by arrangement of definite groups, and after the latter have been split up to reconstruct the active substance. One example will suffice for the time being: After the discoveries of Crum, Brown and Fraser, it became possible, by methylizing alkaloids of different physiological action to obtain bodies which paralyze the motor nerve termination, or, in other words, exert a curare-like action. In general it is immaterial whether these alkaloids induce convulsions—like brucin, strychnin and curare—or fail to do so, as is the case with morphia, nicotin and atropin. From these experiments, the general rule may be decided that the composite radicles in which methyl stands in the same relation to quaternary nitrogen act as paralyzants. Therefore it is possible to obtain from all tertiary bases—which are mostly little toxic—by methylization, much more poisonous ammonium bases. Thus Bohm found in curare two bases, side by side, viz., curarin and curin. Curarin is an ammonium base, curin a tertiary base only slightly poisonous. When Bohm methylized the tertiary base and thereby transformed it into an ammonium-base, he produced curarin, which is 226 times as poisonous. The fact that the arrangement of given groups which are identical will weaken or destroy outright their action is established as follows: If substances containing hydroxyl, such as phenol, alcohol, etc., are transformed into their *paired* combinations by sulfuric acid they lose their poisonous qualities almost completely. While phenol exhibits a considerable toxicity after internal administration, phenyl sulfuric acid given internally in its sodium-salt exerts no poisonous action even in doses of 30 gms. The so active morphin loses its action completely when transformed into morphinsulfuric acid and can even be given in 5 gm. doses without damage. In order to adduce a further example the introduction of acid radicles into basic residues will notably weaken the latter, or even completely destroy them. Thus acetamid is completely inert, while ammonia is a violent poison. Acetanilid (antifebrin) is far less poisonous than anilin.

In the same manner the introduction of hydrogen into the cyclical bases will always strengthen the physiological action and increase the toxicity.

The definite groups of substances lose their activity through simple changes of the molecule (perhaps the transformation in the character of the combination from base to acid) may be explained physiologically as follows: The "point of attack" is displaced or abolished, because the action of substances upon definite cell-groups in the organism (i. e., the selective action) can only be interpreted by the theory that groups at the end of the molecule enter into chemical relations with the cell-substance, and are retained by the latter; after which the entire molecular complex succeeds in producing its result. If now we change the group at the end, the chemical relationship which produces the selective action is no longer present. The molecule cannot now be "anchored," and produces no effect although still intact. P. Ehrlich has applied this reasoning in connection with coloring matters. In all

of the latter a chromophose group exists which is distinguished by a close union (for example, as with the azo-group). All the coloring-matters of this group are decolorized when treated with reducing substances, and by the introduction of hydrogen the close connection of the chromophose group is destroyed. Thus are obtained indigo blue and indigo white. But these chromophose groups alone are insufficient to engender coloring matters, and have simply a chromogenic character. Acid or basic groups must still be forthcoming, as the hydroxyl or amido-groups. When the hydroxyl groups enter into azobenzol, the brown oxyazobenzol is produced; and when the amido-group enters, the fine yellow amidoazobenzol. Hence to produce a coloring matter two components are requisite, viz., the chromophose and salt-forming groups. The color is also dependent upon the number of salt-forming groups. The monamidoazobenzol is yellow, the diamidoazobenzol is orange, the triamidoazobenzol is brown. As we have seen, many poisons are rendered inert by the simple introduction of acids. Nencki endeavors to explain these differences upon chemical grounds by differences in oxidizability. But P. Ehrlich holds this explanation to be unsatisfactory, and believes he has arrived at a comprehension of this fact through experiments. Thus there is a series of colors which color the brain of animals; if however, sulfuric acid is introduced, thus preparing the corresponding sulfo-acid, the property of staining the brain is completely lost. The neurotropic function has been forfeited. We are now forced, in reference to the relationship between constitution and action, to introduce a third motion, viz., that of distribution. How shall we represent to ourselves the selective quality of the tissues? It is not a question of closely allied chemical relations but ofttimes only of physiological conditions. Thus chloroform tends to accumulate principally in the red corpuscles. According to Pohl this is due to the facility with which chloroform mixes with lecithin. Myelin behaves in the same manner in the presence of fatty substances. The hydrocarbons of ether, ketone and sulfon-combinations should behave in a similar fashion. More obscure are the conditions in other groups of chemical combinations, such as acids, bases, alcohols and phenols, for these may readily form chemical combinations with different protoplasmic groups. In a chemical combination the substances should not be extracted from the tissues by alcohol. But experiment teaches us that phenacetin, kairin and thallin may be extracted by alcohol, and hence we know that chemical combinations have not been formed between the basic substances and the protoplasm. So in a fuchsin-kidney, the fuchsin may be extracted by alcohol. The only substance which cannot be thus extracted is probablv anilin.

How shall these phenomena be explained? The process of coloring, according to Ehrlich, is the same as that which results from the injection of poisons into the organism. Wool fibres dipped in solution of picric acid appropriate from this fluid, however weak, the coloring principle; just as certain tissues appropriate a poison from the blood. As to coloration there are two theories, viz., that of salt-formation and Witt's set-solution theory. The latter implies that the coloring-matter in the fibre is not in a solid state but still in solution. There are coloring matters which are red when solid and fluorescent in solution. Silk colored therewith is likewise fluorescent. It is no objection to this view that different fibres take different colors. Iodin, dissolved in different fluids, such as solution of potassic iodide, chloroform, etc., gives different colored solutions. The fibre of tissue takes the coloring matter from the solution and is thus stained; if its solubility in alcohol is greater, the fibre is decolorized.

The behavior of substances in the organism is, according to Ehrlich, entirely similar to the foregoing. All the brain-coloring matters lose this property when a sulfo-acid group enters into combination. The majority of the substances which go into the brain, also go from water over into ether, not, however, as sulfo-acids. Hence there are substances in the brain which act in the same manner as ether in a test-glass. The powerful action of certain poisons upon the brain is anlagous to the shaking out of the same by ether. The localization f various substances in the tissues of the body depends upon this kind of action. In the cells of various organs are different chemical groups, and individual substances like myosin have very different capacities according as they are in alkalin neutral or acid media. Individual substances are not taken up by the protoplasm of the cells, but from the intermediate substances—as certain coloring matters by the nerve sheaths. An example of the set-solution is afforded by iodid of starch, which was formerly held to be a chemical combination. Mylins, however, showed that the starch is simply saturated with iodin. The same blue coloration is shown in certain derivatives of cellulose, the amyloid substances and the cholalic acids. In these bodies are found some of the same structural components. The ability to form a set-solution therefore implies certain chemical peculiarities, affecting an entire class.

The Ehrlich similarity in the chromophose group is well shown in the cocain group. All cocains in the chemical sense (ecgonin compounds) cause the same pathological changes in the mouse's liver, but the anesthetic property is limited to a union with the benzoyl group, which is anesthesiophoric, while the methyl group is only anesthesiogenic. Ehrlich regards this view as a new method for the synthesis of new remedies. It is necessary first to select a group of substances which have an affinity for certain tissues, and in these substances nuerotropic, myotropic, etc.—various groups may be introduced which exert either a toxic or therapeutic action.

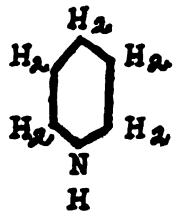
The theory of Oscar Loew (Natural system of Action of Poisons, Munich, 1893) holds that all those substances which, when highly diluted, attack aldehyd or amido groups, are poisonous to everything which lives; and the more readily they react the greater their efficacy and toxicity. Thus the bases hydroxylamin and diamid, which react as readily in connection with aldehyd and keton groups are highly poisonous to plants and animals,

even including derivatives of hydroxylamins like benzenyl amidoxin.

On the other hand, other ketoxines, not capable of reaction are only exceptionally more poisonous than the ketones from which they are derived. Phenylhydrazin, uncommonly susceptible of reaction with aldehyd and keton groups, is a very violent poison to the blood. Anilin, on the other hand, which reacts with more difficulty with aldehyd, is a weaker poison than phenylhydrazin, just as free ammonia is weaker than diamid. The hydrogen which adheres to the nitrogen may attack the aldehyd groups of the protoplasm with readiness or with difficulty.

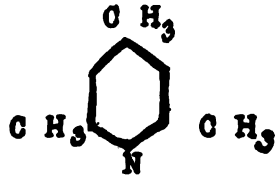
Substances with tertiary nitrogen, which possess little or no poisonous action, may be transformed into strong poisons by reduction and formation of imid groups.

Piperidin =

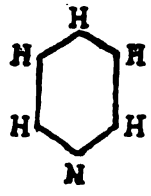


Piperidin is much more poisonous than pyridin, and pyridin than collidin. Tetra-hydrochinolin acts more energetically than chinolin, and pyrrol than pyridin. According to Loew these facts are readily explained by increase in the capacity for reaction

Collidin =

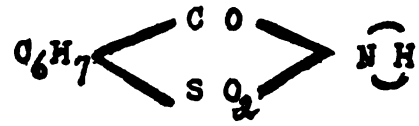


Pyridin =



in reference to the labile aldehyd groups of the protoplasm. They are further supported by observations which show that substances with labile amido-groups increase in toxicity when a second amido-group passes into the imido-group, the toxicity diminishes. Thus the phenylendiamins are more poisonous than toluidin. When in anilin one H of the amido-group is replaced by alkyl, so that the amido-group becomes an imido-group, the toxicity diminishes for the reason that the substitute anilin reacts with difficulty with aldehyds. These bodies are then no longer able to excite convulsions. But when the alkyl is not in the lateral chain but replaces the nucleus-hydrogen, so that the amido-group remains intact, the convulsivant action also persists. This fact may be demonstrated in a still better fashion by the weakening in action which follows the entry of acid-residue into the amido-groups. Thus the acetanilid is far less toxic, as well as less capable of reacting with aldehyd than anilin; just as acetylphenylhydrazin (pyrodin) is much less toxic, and also less disposed to reaction with aldehyd, than phenylhydrazin. Such a weakening of toxicity by weakening in reactivity with aldehyd groups could be demonstrated in connection with numerous other substances, and will be discussed later.

Loew explains the toxicity of the phenols by their ready reactivity with labile groups of atoms, especially aldehyds. This reactivity diminishes when negative groups of carboxyl or sulfo-acid enter into the molecule. For this reason salicylic acid is less poisonous than phenol. Saccharin (benzoate of sulfinid)



is entirely non-toxic, as through the simultaneous presence of residues of carboxyl or sulfo-acid groups, the imid-group shows but little reactivity.

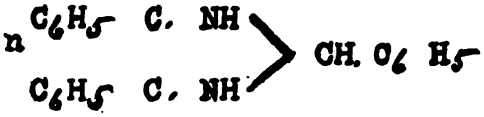
These views of Loew, however, cannot always be applied so fortunately as the only mode of explanation. Only by forced interpretation can this theory be applied to hydrocyanic acid and its derivatives.

Loew's theory culminates in the following conclusions:

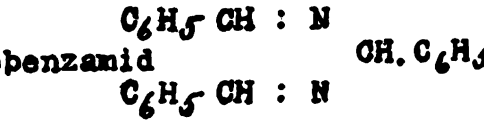
1. Every substance which reacts when greatly diluted is a poison. Examples: Hydroxylamin, phenylhydrazin.

2. Bases with primary nitrogen are more injurious than those with secondary nitrogen; and these in turn than those with tertiary nitrogen. Xanthin with 3 NH groups is more poisonous than theobromin with 1 NH. this in turn than caffein. Amarin is poisonous, while its isomer hydrobezamid is not. Piperidin and pyrrol are more poisonous than pyridin. Pyridin and hydrobenzamid have tertiary N, amadin, piperidin and pyrrol secondary N.

Amarin



Hydrobenzamid



The methylized bases with nitrogen strychnin, brucin, codein, morphin, nicotin are far less poisonous than the original alkaloids, and have in part a different action.

Exceptions to Loew's second axiom occur, al-

though rarely. Thus chinolin appears to be more injurious to some species of schizomycetes than tetrahydrochinolin.

Methyl, ethyl and amylanilin have an action differing from and weaker than anilin.

Every chemist understands that the entry of radicals into original bases concerns the poisonous properties in the matter of the substitution of the hydrogen associated with nitrogen or with carbon or oxygen. When substitution of the nitrogen occurs the aldehyd nature of the active albumin presupposes a weakening of toxicity.

If the substitution affects O atoms, the toxicity is increased. Thus it is claimed that dimethylresorcin is a stronger poison than resorcin.

3. When within a poison certain new groups are introduced, or when the atomic arrangement is altered with resulting increase of instability, the toxicity is increased and vice versa.

Examples: The introduction of hydroxyl groups into the benzol-nucleus increases the reactivity. Thus trioxybenzoles (phlorogluein, pyrogallol) are more injurious than the dioxybenzoles (resorcin) and these than monoxybezol (phenol). If the hydroxyl groups are replaced within a poison by electronegative and otherwise harmless groups the instability and toxicity alike diminish. Morphin-ether-sulfuric acid has an action different from and weaker than morphin. The hydrogen which adheres to the nitrogen in phenylhydrazin has a much more unstable position than that of anilin, which differs from phenylhydrazin only by a minus of an imid group. The first named is much more toxic than the latter.

Sulphocyanid of ammonia gradually destroys plants, while its isomer thiocarbamid does not. Binitronaphtholsodium is quite poisonous, while the sulfo-combination of binitronaphthol is hardly toxic at all. Substances with double carbon (acrolein) are more reactive and poisonous than compounds with single carbon. Neurin is more poisonous than cholin.

4. The same poison will most rapidly destroy that form of protoplasm which develops the greatest functional activity.

In the presence of terahydrochinolin the development of schizomycetes occurs much more slowly than with the same substance with its N methylized. Pyrrol is much more poisonous than pyridin.

Interesting results which may be applicable to the theory of action appear from the investigations of Loew and Bokorny upon the action of substances on the growth of the algae.

With increase in alkali, in regard to the entrance of nitrogenous groups, the injurious action upon the algae increases. Urethan does no harm, urea causes morbidity after several days, guanidin kills in a few hours. If acid groups enter into the molecule of urea or guanidin, so that the alkali is diminished, the injurious action disappears.

We see from these attempts at a theory of action that while a relationship between constitution and action is not to be denied, a theory is still lacking which will explain all the facts in the action of the most varied species of organic and inorganic substances upon the organism; and which will hold good for all organisms and organs. The difficulties doubtless lie chiefly in our defective knowledge of the selective power of various organs, our principal sources of information lying in our acquaintance with histological stains and toxicological experiments. The chemical causes of this selection we can but barely surmise, as in the case of alcohol and chloroform; but for the majority of chemicals we cannot even form a supposition. Loew's hypothesis, ingenious as well as simple, gives a satisfactory explanation in only a limited number of groups, as those which react with the aldehyds and amids. It cannot explain why certain groups of cells, especially organs, select particular substances for reaction. Loew's theory, says Fränkel, in Arzneimittel-Synthese, from which this paper is largely taken, is concerned chiefly with protoplasm; but each kind of protoplasm in each organ and tissue contains unstable aldehyds and amido-groups, which, according to Loew's views, are necessary for chemical action with in the organism. There is nothing here to explain selective action; but it may be assumed that this action is capable of explanation, and that Ehrlich's views represent the first steps in this direction.

The selective force of cells and portions of cells for certain colors, as for acid and basic fuchsin gives us perhaps only a picture of a particular instance of individual selection, but is not in itself an explanation. Strychnia possesses a particular selective force for the spinal cord—a selective force which is fully comparable with that of mercury for the gold dust in powdered quartz. If we were able to determine the causes of this selective force in the tissues; if we were able to recognize the chemical groups in the nerve-elements of the cord which arrest and retain the strychnia as it passes through the blood vessels of the cord; if we were able to recognize the groups in the strychnia which are retained by the cells of the cord, we would be enbled to construct a series of substances which only adhere to the cord and there undergo reactions, and we could by means of syntheses produce active groups at will.

We already possess an abundant empirical material, which enables us to construct a picture of active and non-active substances, and to show that definite groups of atoms in definite positions either act of themselves or produce their action by incorporation in other groups. We also know that definite groupings of atoms incorporated in physiologically active substances may either arrest the action outright, or weaken it or give it another direction.

The same substances, moreover, independent of the dose, may behave very differently in physiological and pathological conditions. Thus quinia will reduce the temperature during fever some 3 or 4 degress; while in the healthy body, the temperature is but sligthly depressed.

In acute articular rheumatism, salicylic acid promptly lowers the temperature; but in other febrile conditions the antipyretic action is weak or absent, while in the healthy organism the temperature is unaffected.

For the production of action the concurrence of several factors is requisite. An effective substance without a customary action, can be made to have such an action. It is necessary for its end-group to come in contact with organs or tissues to deter-

mine this action of the substance as such. The end-group, which serves to "anchor" the substance, may or may not exert some action. The basic substance may be only a vehicle for the active atoms, which may occupy such a stereochemic position that they are able to unite chemically with some definite group of actions in the tissues.

The road to the increasing recognition of the varied relations of different active series is the study of the possibilities under which they act, and especially physiological and chemical studies of substances which act in small doses, and chiefly upon particular organs or tissues, such as the vegetable alkaloids.

The view just enunciated that active substances possess end-groups which can combine with other substances in virtue of their position, may be demonstrated by many examples. It may also be shown that the physiological action is produced as a rule by the main portion of the molecule, or by some lateral chain in the same, and only exceptionally by the anchoring atoms. We must, therefore, distinguish between two groups in every active substance. The lateral chain, or the residue which unites chemically with groups of atoms in the tissues, thereby "Anchoring" the molecule, represents one group; while the other consists of those atoms which produce the physiological action. But both the anchoring and active groups may have the same grouping of atoms. If the anchoring group is altered or closed, another than the original physiologic action may be exhibited, provided another anchoring group is at hand. Since this group may have relations with some other organ or tissue, it might be able to determine a physiological action of another character; or the entire molecule might be so modified by the change as to exert a different action. This case occurs when there are several points of anchorage in a given molecule with several groups having a different action. The anchoring group having chemical reactivity controls the situation.

It may also happen that anchorage is determined by an oxidative alteration of the chemical substance.

A few examples may here be cited: Morphin has marked hypnotic properties. In morphin we must regard one of the two hydroxl-groups as the anchoring element. If this is closed by the introduction of a sulfuric acid group, the morphin thus modified cannot came in contact with the tissue of the central nervous system to be anchored, and no action results, for the introduction of negative acid groups abolishes the reactivity of the substance in relation to the tissues. But if the hydroxyl group is closed by the introduction of organic radicles by etherisation or esterisation, acetylmorphin, methoxymorphin, ethoxymorphin, etc., are produced and the hypnotic action present in morphin largely disappeas and a strychnin-like action upon the cord-centers and respiratory centre comes to the front. This property is really present in morphin but is thrust into the background by the hypnotic action. This action upon the cord centers therefore prevails in all the codeins.

The existence of acid properties or the introduction of acid groups can, as we have seen, abolish the activity of a substance, for the acid end-group destroys or lessons the chemical reactivity of the anchoring atoms. In the case of morphin we see that the introduction of a sulfuric acid group, despite the presence of a second anchoring group (which appears to determine the action of codein), deprives the molecule of its action; and only when very large doses are given do we see appear in morphin-ether-sulfuric acid a strychnin-like or codein-like action, while the hypnotic power has been abolished by the covering of the hydroxyl.

That the entry of the alkyl group in morphin does not cause the action of codein—in which the methoxyl-group secures intimate relations with the cord—and that this new action is actually due to the presence of an old group which begins to assert itself, is shown by the following:

The entry of the methoxyl-group does not modify the reactivity with regard to the cord; but the very opposite may occur.

Strychnin and brucin are entirely similar in their physiological action, both acting upon the anterior horns of the cord and producing convulsions. The only difference lies in the fact that strychnin is forty times stronger. Chemically, the two alkaloids differ in the fact that brucin may be regarded as strychnin with two of the hydrogen-atoms of its phenyl-group replaced by two methoxyl-groups.

Strychnin is

$$C_{15}\ H_{17}\ N_2\ O_2—C_6\ H_5$$

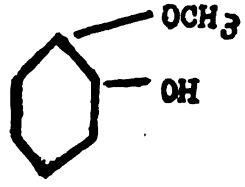
Brucin is

$$C_{15}\ H_{17}\ N_2\ O_2—C_6\ H_3\ (OCH_3)_2$$

Hence the introduction of methoxyl groups instead of promoting the reactivity towards the cord actually tends to produce the very opposite.

It must, therefore, be some other grouping which makes possible the adhesion of strychnin and codein to the cells of the cord. The behavior of guaiacol appears to justify the supposition that one methoxyl group has intimate relations to some substance in the cord.

In guaiacol



exert tetanizing and paralytic qualities while in veratrol

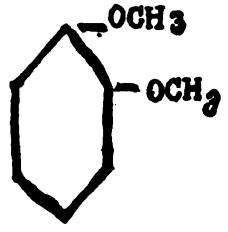


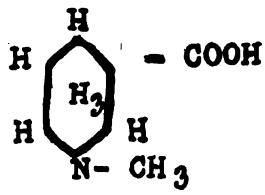
exhibit only the latter. But pyrocatechin has tetanizing qualities in higher degree than guaiacol.

The covering up of the acid character which hinders the adhesive properties of a substance, de-

spite the presence of anchoring-groups, does not prevent the physiological action, although the acid group itself does not take part in the action, which is inherent in the substance itself, but is not asserted by reason of the presence of the acid.

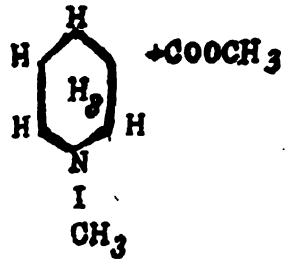
A an example the following will serve:

Arecaidin is without any action whatever upon animals. Chemically it is methyltetrahydronicotinic acid.



Arecolin, the active principle of the areca nut (fruit of areca catechu) is poisonous, its physiological qualities approximate at once those of pilocarpin, pelletierin and muscarin. Hence the areca nut is a vermifuge.

Arecolin chemically is the methylether of arecaidin (see above).



By covering the acid group the action of the hydrated base first asserts itself. The ethylether of arecaidin acts in the same fashion.

The assumption is justifiable that cocain acts in the same fashion. We know that in cocain the anesthetic and other qualities stand in intimate relation to the benzoyl residue. Ecgonin (cocain being benzoylecgoninmethylester) is, however, an acid with free carboxyl-group, and by reason of its acid preperties loses, through its loss of the free carboxyl-group, the well-known physiological qualities of cocain, being only 1-20 as poisonous as the latter. Only when the carboxyl-group is covered does the peculiar action of cocain assert itself. It is immaterial through which alcohol esterisation is brought about; in any case the typical anesthetic action of cocain appears, but this does not come to the free acid. It is not the alkyl-residue, then, which is effective, but this element neutralizes the injurious action which has prevented the group from asserting itself, and the typical anchorage-point is now in evidence.

In the above-described manner inert substances become active, active ones become inert or change their mode of action. More masked qualities are developed when the action of the more prominent substances is abolished or restricted.

That the anchoring group often fails to participate in the action of a substance appears in the case of quinin.

Quinin and cinchonin are distinguished chemically by the fact that quinin contains the methoxyl-group in the para position which cinchonin lacks. Cinchonin has an uncertain action, while quinin has a prompt antipyretic quality, and is also a specific for malaria. As far as the effect is concerned, however, it is immaterial whether the H in the cinchonin is replaced by methoxy-, ethoxy- or amyloxy-groups. As these groups do not produce specific action, we must assume that the alkyloxy-group which makes the distinction between the uncertain chinolin and the certain quinia, is the anchoring-group which makes relations possible between the drug and tissues. After anchorage has occurred, the physiological portion of the main molecule asserts itself. Cinchonin does not possess this faculty of anchorage, hence its action is untrustworthy. When it does act, it is doubtless because the organism oxidizes it in the para-position, and it then derives its power of combination with the tissues from a hydroxl.

In the aromatic substances, the aliphatic portion or a small lateral chain (often a hydroxyl) brings the main substance to action. These aliphatic portions or hydroxyls are far more reactive and more readily attacked than the more slowly acting rings, in which the organism itself must determine the attack.

The total action of a drug must be regarded as consisting of two components. The action of the drug upon a definite tissue is one, while the other consists of the action of the altered tissue upon the organism at large.

According to Harnac for a substance to produce a remedial action of any sort, a certain change must be caused within the organism which can be of use in a given disease.

Schulze comprehends the subject of the relations between medicines and the organism as follows:

1. The efficacy of a medicament depends in the first place upon the narrower or wider relation which exists between it and some organ.

2. The physiological action of a medicament upon an organ is further dependent upon the quantity of the drug, and on the manner in which the phenomena appear.

3. This axiom involves in pathological states and in therapeutic procedures the particular modification which is known as the law of contraction in perishing nerves. We require among pathological conditions only a slight quantity of a remedy in order to secure the desired effect in comparison with the action of the same substance in health.

We have endeavored in the preceding passages to illuminate as much as possible the question of the relation between the structure of substances and their action, a subject which can be discussed more fully under individual drugs.

In intimate relation to this question stands a second one, viz: Is there also a dependence between the action and chemical alteration of substances? This question has hitherto attracted little notice from pharmacologists, and Kobert, who at least expresses himself clearly on the subject, speaks as follows: "The strength of the action of a remedy is not only proportional to the degree of transformation which it undergoes, but there is

absolutely no connection between very active remedies like atorpin and strychnin which leaves the body unchanged, and substances like tyrosin which are completely oxidized to urea, carbonic acid and water, and have a very feeble action upon the body. Herein lies a very important distinction between medicines and foods, for while both consist of the same elements, the efficacy of a food is directly proportionate to the degree of decomposition which it suffers. It is not meant, however, that drugs do not influence the metabolism; for certain substances like quinin and phosphorus affect the latter very markedly. But the changes caused in metabolism by drugs are not proportional to the degree of decomposition which the drugs undergo.

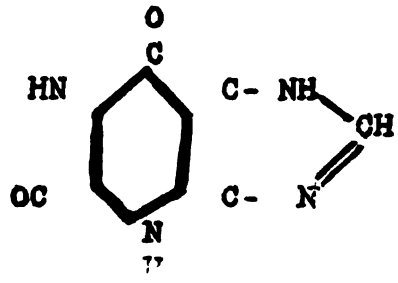
When the substances undergo no change whatever in the body, their physiological results are said to be due to "contact-action," although this expression does not aid us in comprehending the process."

Fränkel urges against these views the following: The great majority of substances which produce effects upon the organism are shown to have undergone some transformation in passing through the body. Among inorganic substances, Binz and Schulz have attempted to prove that certain substances like arsenic are oxidized by reduction of the tissues and again reduced by the tissues. Phosphorus acts upon the tissues as an intense reducing agent, damaging the cells in a most severe fashion; at the same time it becomes oxidized to phosphoric acid. The theory of catalytic action need not be invoked, for we recognize that while exerting their action, the drugs undergo a chemical transformation.

Organic substances demonstrate the preceding still more thoroughly. It appears that the attaching substances undergo a chemical change which is often a complete reconstruction of the molecule; and that these substances, when sufficiently resistent, neither undergo a change or produce any effects. We even know in definite classes of substances—for example in the phenetidin series—from the urine alone whether a new substance is active or not by the presence of derivative substances.

Of considerable interest along this line of argument is the following:

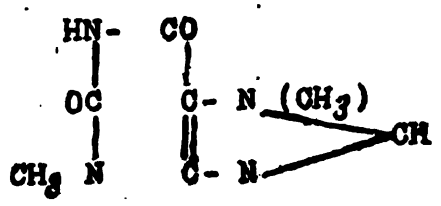
Xanthin



possesses no contractile action upon the cardiac muscle, but it can produce muscular rigidity and paralyze the cord. It confers no tonic action upon the heart, but on the contrary, it does give rise to an atonic condition.

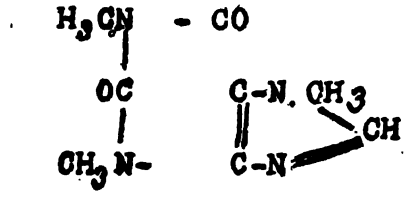
If now methyl groups join the nitrogen, theobromin and caffein arise (dimethylxanthin and trimethylxanthin).

Theobromin.



Theobromin with two methyls causes a slight increase in heart-tonicity. Caffein with three methyls causes pronounced idiomuscular contractions of the embryonal heart. The tonizing action of

Caffein.



theobromin and caffein therefore stands in intimate connection with the presence of methyl groups in opposition with the nitrogen of the xanthin. These methyl groups lend to the xanthin their fundamental action which is entirely opposed to its own, and the more methyl-residues which enter into combination the more intense and powerful the action (thus cocoa acts more mildly than coffee and tea).

Xanthin is here the vehicle of the methyl groups which owe to it the peculiar arrangement in the molecule, which makes possible a resistent combination with nitrogen. This example shows distinctly the intimate and readily conceivable relations between constitution and action.

The same example shows further how intimate is the connection between action and chemical change.

We have seen how the action of caffein and theobromin is connected with the presence and number of methyl residues in apposition with the nitrogen of the xanthin. If now we investigate the fate of these combinations in the organism, we learn that the metabolic products in the urine after indulgence in caffein and theobromin consist of xanthin bases which have been demethylized. In dogs caffein appears to be transformed first into dimethylxanthin (theophyllin) and from this monomethylxanthin is formed in turn. As bye-products occur both the other dimethylxanthins, viz.: paraxanthin and theobromin. The rabbit transforms caffein into xanthin, while in man caffein changes to theophyllin.

Despite these differences in different species, one thing is apparent, viz: one, several or all methyl groups are rebuilt. It is certain that the action of caffein and theobromin is due to the presence and number of methyl residues; and that during the passage through the body of animals, those very groups disappear which produce the action so that it is safe to assume a connection between action, constitution and chemical change.

An equally cogent example is the following:

According to the well-known investigations of Baumann and Kast, the hypnotic action of the sulfones depends upon the presence and number of ethyl groups. The methylized sulfones are wholly inert and pass through the body unchanged, while the ethylized sulfones cause sleep and leave the body in an entirely altered condition. The sulfone element is found in the urine as an acid, very soluble, and of undetermined nature.

Here the situation is also perfectly comprehensible. These substances, the ethyl sulfones, act through their ethyl groups. The hypnotic groups are remodelled within the body.

The inert methyl derivatives are not attacked within the body.

There are special difficulties in applying this fact, so definitely established for certain series, to all substances indiscriminately. The alkaloids in particular, which can be followed up so intimately offer a field of study in which our views seem not to hold good.

The alkaloids act in relatively small doses; but we are able to recover these substances from organs and from the urine in delicate quantities. On the other hand we do not sufficiently understand the composition of these complex substances, and the relations between composition and action remains in deep obscurity. Hence it is not possible to represent to ourselves the metabolic product which should be the result of the physiological action of the remedy, and the necessary researches to determine whether such bodies occurring in the urine have not afforded the desired results. But it is these very substances which should be most instructive in this connection.

In the case of individual alkaloids, such as strychnin and atropin, the greater part of the dose passes into the urine unchanged, and a further portion, also unchanged, may be recovered from the tissues. Differences between ingested and excreted alkaloid have been explained from the pharmacological point of view. It may be assumed that the residue which is unrecovered, is accountable by incompleteness of the results of analysis; in fact the upholders of the catalytic theory are forced to this assumption. According to O. Modica, the claim of Kratter—according to which all ingested atropin is recovered unchanged—is false. Both in the human and animal organism, and even when organs are artificially surcharged with blood, a small portion of the atropin is decomposed. The strength necessary to decompose the atropin molecule is greater in the dog than in man. A dog can destroy almost completely 1 cgm. sulfate of atropin, while man can decompose but 1 mgm. of the alkaloid.

The following representation of this question may be offered: Alkaloids work in very small doses. We know, however, that they possess selective affinity for certain tissues, and that they are rapidly excreted to a large extent, while a certain portion is retained by and rendered ineffective by the liver, and traces are also recognizable in many other tissues. The part then which produces the action must be an extremely small fraction of the dose.

Strychnia is known to exert its specific action upon the gray substance of the anterior horns of the cord. If we assume that this tissue possesses the capacity of retaining the strychnia as mercury attracts and holds gold, the momentary action of the minute fragment may be regarded as sufficient. The alkaloids, however, possess other chemical relations like those encountered in other bodies which are reactive to protoplasmic substances, such as diamin and phenylhydrazin.

The second hypothesis, then, is that the missing fraction of ingested alkaloid undergoes some transformation which is the cause of the action of the drug, and that all alkaloids produce their results in a similar fashion; and that there is a relationship between constitution and action, as well as one between action and chemical transformation.

Individual poisons may constitute exceptions.

Carbon-oxide is extremely poisonous, yet we know to a certainty that our bodies are unable to produce any alteration in it. This substance is perhaps quite unlike other poisons known to us. The poisonous action consists in simple suffocation, mechanical in character, and entirely analogous to other kinds of choking. It is brought about by the stable combination which the poison forms with the hemoglobin, so that oxygen is shut off from admission to the blood. Such a mechanical action cannot well be compared with the action of poisons in general, where both drug and tissues undergo chemical change.

That the strength of the action of a remedy is the degree of transformation undergone may be made clear by a number of examples.

To continue with the illustraton of strychnia: Small doses are sufficient to tetanize the muscles of the body; but there is no relation between strength of action and degree of decomposition in relation to the law that latent energy is set free in chemical change. We see the muscular twitchings and now that the strychnia has excited the nerve centers in the cord, and that this excitation is expressed by the musculer movements. It is no more a question of the liberation of latent energy than when pressing an electric button fires a mine.

We have to do chiefly, then, in these drugs, with substances which are decomposed with more difficulty than foods. Nearly all of the latter are readily metabolized, while drugs exhibit more or less resistence. The latter, however, is not so great that it prevents the combination of the drugs with the tissues. When this degree of resistance is present, the substance is said to be inert. The resistance of active substances, and especially of specific drugs which act upon individual tissues, appears to furnish the basis through which such selection of tissues is rendered possible.

If the drug react with protoplasm of every sort, specific results are impossible of attainment; the very degree of resistance of most tissues makes it possible for small doses of certain substances to exert a specific action upon particular tissues, while others are not affected.

In synthetic medical chemistry we avail ourselves of these experiences, by artificially giving our synthetic remedies a certain degree of resistance, in order that reactions may not occur with too great readiness and cause collateral phenomena. This

artificial resistance prevents reactivity with tissues not intended to be molested. Therefore all substances with an unusual degree of reactivity, able to react with all kinds of tissues, are not applicable in medicine (diamid, phenyhydrazin, formaldehyde, cyanogen hydrid), unless some degree of resistance has been artificially conferred upon them, or unless the dose is graduated to a certain point.

The resistance of certain substances towards the organism, and the special reactivity to certain tissues often brings about the result, that remedies which are excreted by the urine are very largely unchanged therein. The more substances tend to get into the urine, and the more they irritate the renal epithelia, the more likely are they to be found unchanged in the urine.

As we have already expressed our views, the notion "selection" is very well accounted for upon a chemical foundation, although a mechanical element is introduced in the stereo-chemical position or particular groups of atoms. The attempt of Paul Ehrlich to liken selection and action to the "set lotion," has already been cited. Recently Hans Meyer has submitted some material founded on experiment, which introduces a purely physical factor which is claimed to be of great value in the explanation of the action of narcotics. He even goes so far as to state that only this doctrine of selection can be applied to narcotics, the action of which substances is called forth by physical factors alone.

According to this assumption, the narcotic action of various substances is a function of affinity for fat-like substances, which he formulates as follows:

1. All substances which at first are chemically indifferent, which are solvents for fat and fat-like bodies, must exert a narcotic action upon living protoplasm as far as the latter is exposed thereto.

2. The action appears first and strongest in those cells in the chemical formation of which fat-like substances predominate and carry on the function of the cells; in first importance naturally the nerve-cells.

3. The proportionate strength of action of such narcotics must depend upon the mechanical affinity for fat-like substances on the one hand, and on the other to the other constituents, i. e., chiefly water; and in general to a co-efficient which consists of a mixture of water with the fat-like substances.

It does not appear necessary to extend Meyer's theory to the theory of action of remedies in general, and thereby practically deny a connection between structure and action which Baumann and Kast appear to have shown in connection with hypnotics. On the other hand, Meyers theory is highly interesting, and if true, would necessarily apply to all remedies and displace the older views.

We would venture whether these attempts at explanation on the part of Ehrlich and Meyer, in which physical factors are evoked to explain these phenomena, are to be applied universally or in the case only of particular groups. A starting-point for the physical theory might be found in the observation of Pohl, to the effect that druing chloroform narcosis, the anesthetic circulates in te blood, etc. in such fashion that the red corpuscles, so rich in lecithin, retain it, the latter substace being in solution in the chloroform.

The action of certain inorganic substances, such as arsenic and mercury, can be explained by other than a chemical theory, and in this connection I may mention the investigation of Ludwig and Zillner in regard to the quantitative estimation of the distribution of poisons throughout the various organs. The following example, however, will give a stereo-chemic conception of selection and action which is certainly well-supported. We know that all ammonium-bases independent of the construction of the rest of the molecule, and also independenly of the alkaloid lying at the foundation of the ammonium-base, act upon the terminal filaments of the motor-nerves, and that the seletion exhibited by the entire group is that of a paralyzant of these structures. The stereo-chemic configuration of the ammonium-base has a predilection for the end-plates of these nerves, that the pressure of other substances in the molecule exerts no influence upon any other portion of the body, and it is therefore a matter of indierence whether these bases are aliphatic or aromatic. That this peculiarity is not due to the presence of nitrogen is shown by the fact that other bases containing phosphones, arsenic and antimony in place of nitrogen (arsonium, phosphonium and stibonium bases), have the same action as the ammonium-bases, uninfluenced by the presence of the combined metals. This experience teaches us that we must always study the effect of the stereo-chemic configuration upon selection. The deeper we go into these possibilties the more comprehensible will appear the relations between the configuration and specific selection, and by so much more can we dispense with physical hypotheses.

When Emil Fischer finds that a definite configuration is necessary for a sugar molecule in order that certain kinds of yeast may work, and that the fermenting portion of the yeast-molecule is related to the fermented sugar molecule like a key to its lock, we can apply this view to many other series of substances which have a selective action and are also decomposed by exerting it, all other tissues being respected.

The idea of the configuration will explain not only the principle of seletion, but the action of the remedy itself, and it is the scientific foundation for a new theory which shall be applicable to all groups of substances, and especially to all which act upon single tissues.

Any one theory which seeks to account for all the phenomena of selection and action, whether physical or chemical in character, must inevitably be shattered.

ON THERAPEUTIC ACTION OF NITRO-GLYCERIN: A VALUABLE DRUG FOR RELIEVING MUSCULAR SPASMS.

H. E. RANDALL, M. D.,
Lapeer, Mich.

A terrible and violent explosive is nitro-glycerin. On the shelves of every doctor's office are three bottles of very innocent appearance, yet they are the ingredients of the most powerful explosive in exis-

tence. Discovered in 1847 by Ascagne Sabrero, it was not applied to practical purposes until 1864, when Alfred Nobel, a Swedish engineer and resident of Hamburg, became interested in this perilous discovery, and assisted by his brother, who lost his life in one of their early experiments, Alfred Nobel, undaunted, kept on until he perfected a process whereby nitro-glycerin could be manufactured with comparative safety. Alfred Nobel also introduced the practice of soaking common gun cotton powder with it for blasting purposes, and in 1867 conceived the idea of combining some inert substance with it as silicious ashes or infusorial earth, and the result is what we know as dynamite. Cordite, a smokeless powder, and the newer explosives are but different combinations of nitro-glycerin.

The names, glonoin, trinitrin, were proposed because so much apprehension was felt by some patients who were taking the drug. Indeed, the early experimenters were inclined to attribute its physiological effect of quickened pulse, flushing of face, giddiness, etc., as being due "probably to fear and imagination." The quickening of the heart's action and pulse, Dr. A. G. Field, of Brighton, one of the earliest experimenters, attributed to fear, but the head and neck sensations (tension of head and feeling of constriction around neck) were "too constant to be attributable to the same, although he thought it might be exaggerated by the imagination."

Remington's *Practice of Pharmacy* does not give the process of making nitro-glycerin, probably considering it unsafe for anyone to make, except some one who has been blown up two or three times. Liebe's process of manufacturing nitro-glycerin is as follows: "half an ounce of dehydrated glycerin is poured with constant stirring into a mixture of two ounces of pure sulphuric acid and one ounce of fuming nitric acid of specific gravity 1.52—the temperature of the mixture being kept below 25°C. (77°F.) by external cooling with ice—and as soon as oil drops begin to form on the surface, the mixture is poured with constant stirring into fifty ounces of cold water. Nitro-glycerin separates and may be purified by washing and drying in small quantities in a vapor bath. The glycerin is added drop by drop, and temperature carefully noted by means of thermometer. The nitro-glycerin is well washed to free it from acidity." At ordinary temperature it is an oily liquid usually colorless. When first seen it has a milky color which gradually disappears. It may be a surprise to many to learn how the tramp safe crackers, "the yeggmen," get their nitro-glycerin. Pinkerton, the famous Chicago detective, tells us that they extract the nitro-glycerin from dynamite sticks under water, and carry it around in bottles, a menace not only to themselves but to every one around them. They are very much like the colored man who had a chicken under his coat, when his pastor met him. "Don't touch me pas'on I'se got heart disease, and liable to go off any minute."

Persons differ greatly in susceptibility to this drug. To rats and mice the drug is only slightly poisonous. We get the physiological action of nitro-glycerin quicker than any other drug excepting nicotine and prussic acid. In fact its action is so prompt that no time is saved in giving it hypodermically if the patient can take it by mouth. Its marked action on the circulation makes it one of the most valuable drugs at our command. In from one to five minutes after a medicinal dose is taken, we get the physiological effect, fulness of head, flushing of face, sometimes a feeling of giddiness and pain in stomach, and increase of pulsation with lowering of arterial tension. As with all other drugs, a tolerance can be established. Cases are reported which have taken as much as 6 grains of nitro-glycerin daily without deleterious effects, and with apparent cure of disease, (chronic nephritis). It is an antispasmodic and death from a poisonous dose is result of asphyxiation due to paralysis of muscles of respiration. An overdose produces diminished sensation, motion, and reflexes, tumultuous action of heart by its power over the inhibitory apparatus, a sensation of heat but lowered body temperature and impairment of ozonizing function of blood. Dr. Murrell, narrates a few cases in which unconsciousness was produced without any ill results except temporary headache.

Nitro-glycerin made its reputation in angina pectoris and to this day it is at the head of the list of remedies for that distressing disease. To meet the paroxysms of the disease amyl nitrite is preferred, but nitro-glycerin should be given not only continuously but pushed to the degree of tolerance; starting with a small dose (1-100 gr) three times a day, the drug should be increased to four or more doses as the patient may stand and the disease require. The higher the tension in the vessels the greater the need of the drug, and this statement is true whenever the drug is used. In migraine with blanched face and in cerebral anemia it is indicated. Certain cases of anemia are obstinate to treatment by iron until nitro-glycerin is given. This has been my experience in a few cases, and not until I commenced giving nitro-glycerin with the iron did the patients improve. In Bright's disease with laboring heart, high arterial tension, and dyspnea, the treatment has not only given relief but apparent cure. The conditions to combat in chronic renal conditions are the poison in the blood and the high tension of the contracted arteries; great care, however, must be exercised in this disease, not to reduce the tension too much.

For the relief of muscular spasms as in hystero-epilepsy puerperal eclampsia, tetanus, spasmodic asthma, as well as in renal and gall stone colic, nitro-glycerin promptly relieves some of the cases. I think the majority perhaps of physicians think of nitro-glycerin only in connection with its action on the heart and blood vessels forgetting that it is one of the most useful remedies in relieving muscular spasms in other affections. The next case of hysteria with cold hands and feet that you have, try nitro-glycerin. In paroxysms of hysteria of this nature it acts like magic. I have not had as good results with amyl nitrite as with nitro-glycerin. The drug in hysteria is worthy of a more extended trial. My usual method of giving it is 1-100 or 1-50 gr. tablets and repeat in five minutes if necessary. Sajous's *Annual and Analytical Cyclopedia of Practical Medicine* quotes J.

H. Upshur, "for relief of muscular spasms present in renal and hepatic colic there is no more powerful remedy than nitro-glycerin, and the same is true of cases of spasms of the bowels and stomach, whatever the source" and S. L. Trumbull "A case of gall stone colic was promptly relieved by nitro-glycerin. The use of nitro-glycerin in biliary colic is suggested by its known action on the unstriped muscular tissue. Presumably it relieves the spasms of the gall bladder and ducts." I think that if the physician of to-day would use fewer drugs and understand thoroughly what they may accomplish, he will cease to chase the polypharmacy that threatens ere long to deluge him and drive him to an insane asylum with the vaunted praises of a shrewd manufacturer.

Nitro-glycerin is one of our most valuable drugs, but at all times should be used with caution and knowledge of exactly what you are using it for and what you may expect. In nitro-glycerin we have a valuable remedy for spasmodic affections and it is worthy of a more extended trial and use by physicians.

YEAST TREATMENT OF LEUCORRHEA AND OF GONORRHEAL VAGINITIS.

By PH. CHAPELLE, M. D.,
of Paris.

Yeast in the treatment of chronic leucorrhea, and vaginitis due to gonorrheal infection, has recently been tried with considerable success. Dr. Landau, of Berlin, was the first to apply it locally by injection for troublesome vaginal secretions, and found small quantities produced a rapid and complete arrest of the discharge, after a few weeks.

Murer in France has used it in the same manner in gonorrheal discharges from the vagina, and found yeast most effective in suppressing inflammation of the mucous membranes, which regained their normal color rapidly. In the gonorrhea of men, however, it was not uniformly successful. In leucorrhea and gonorrheal vaginitis, there occurs a substitution of a morbid fermentation for a non-dangerous yeast fermentation, for the yeast-cells (saccharomyces cerevisae) appear to devour the morbid germs, which set up inflammatory conditions.

Backer, who has made a study of the various ferments, is of the opinion that the natural toxines, however altered, may in the treatment of disease be replaced with advantage by ferments in the living state. He considers good health to be one of morbid fermentation.

Hence, pure ferments like yeast attract pathogenic germs, allow themselves to be penetrated by them and, once enveloped, destroy them by a true phagocytosis. D'Arsonval and Charrin have also made a series of investigations on the reciprocal action of microbes on vegetable cellular tissues, and it would appear that in the case of yeast, in its struggle with pathogenic germs, it expends its energy as a ferment, acting consequently by reason of its phagocytic properties.

We see, therefore, why the treatment of leucorrhea and other vaginal discharges with yeast is based on reasonable grounds, and it should, therefore, be tried in obstinate cases, which do not yield to tonics and the usual local treatment.

The application of yeast in this connection is not convenient, owing to its keeping badly, its offensive smell and the difficulty of obtaining fresh supplies, as well as its inconvenient frothy nature, which makes it difficult to be retained when injected. This, however, can be overcome by using the pure desiccated form, known as cerevisine, which may be exhibited in the form of a pessary of cocoa butter filled with cerevisine, and placed in position on going to bed, or a paste made up with glycerine of starch, and retained with a tampon of absorbent cotton, or again applied by dipping absorbent cotton in a thin paste of cerevisine and water. The quantity for application is not important, as it is perfectly harmless, but from one to two teaspoonfuls can usually be introduced and retained in the vagina during the night, which will give more cleanly and comfortable results than injections of brewer's yeast during the day.

PRELIMINARY STUDIES ON THE INTRA-MUSCULAR INJECTIONS OF IODO-CACODYLATE OF MERCURY IN SYPHILIS.

By PROF. L. BROCQ,
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Chemists,
Translated by Edmund L. Gros, Paris.

In November, 1900, we experimented with the injections of acid cacodylate of mercury. That salt has been known for a long time. Bunsen studied it in 1842, but till now, to our knowledge, it has never been used in therapeutics. The pain provoked by these injections to patients and serious accidents produced on animals under experimentation, soon forced us to renounce them. We have replaced them by a different product, the **iodo-cacodylate of mercury.**

This is obtained by neutralizing the acid cacodylate of mercury by soda in the presence of iodide of sodium. You have thus a mixture soluble in water, perfectly stable, resisting to a temperature of 120° C. without decomposition, uninfluenced by light and giving no precipitate in the presence of blood serum. So many qualities that the acid cacodylate of mercury does not possess. This solution, perfectly liquid, may be preserved indefinitely and with it no emboli are to be feared.

Here is, in its general aspect, our method for obtaining the iodo-cacodylate of mercury:

Dissolve 1 gram cacodylate of mercury and 2 grams of cacodylic acid in 75 grams of distilled water and add one gram of iodide of sodium, then some caustic soda to neutralize, and complete with distilled water to produce 100 cubic centimeters of liquid.

Then 1 c.c. of this solution contains:

1. 4.7 milligrams of bin-iodide of mercury.
2. 4.7 of iodide of sodium.
3. 3 centigrams of cacodylate of soda.

Method of Using.—We learn from the studies of Prof. A. Gautier, whose authority is incontestable in this matter, that the cacodylate of soda

taken by the digestive tube is changed into the oxide of cacodyle, a toxic substance. It therefore appears a priori that the cacodylate would be very much tolerated in hypodermic injections than by the digestive tube. It was, however, necessary to verify that fact. We made a few experiments on this point, but did not persist in the administration of the cacodylate by the mouth, the results having appeared to us rather unsatisfactory.

In fact, we obtained diarrhea in two cases out of six. One of these patients, it is true, had previously presented this symptom before this treatment, but the diarrhea ceased as soon as we suppressed the cacodylate, to reappear with the continuing of the treatment and to cease again when we replaced this drug by Van Swieten's solution.

A third patient presented not alone diarrhea, but a kind of gastric attack with pain, bloody vomit and finally an absolute intolerance of the stomach. These symptoms may have purely a nervous origin, for these phenomena ceased suddenly when she was treated with massive injections of artificial serum, and we may ask ourselves if our cacodylate was the cause of the above accidents.

The three other cases presented no intolerance.

Curious to relate in these cases of administration of the cacodylate by the mouth, we did not observe the characteristic garlic odor to the breath.

As a result of the foregoing experiments, we have concluded to administer the cacodylate hypodermically.

Doses.—We have always begun our treatment with a dose of 3 centigrams, that is, 1 c.c. of our solution, daily. After several failures we increased the dose to 6 centigrams, or 2 c.c. As this dose was perfectly accepted by our patients, we have given it to nearly all our syphilitics, notwithstanding that the dose of three centigrams appeared sufficiently active in many rebellious cases.

If we consider that our researches were made on women whose mean weight varied from 60 to 65 kilograms (135 to 146 pounds), one of them only 37 kilos, it is allowable to suppose that with a vigorous subject one could, without inconvenience, further augment the dose.

Modus Operandi.—We give our injections in the classical region for mercurial injections, that is, in the superior and internal gluteal region. The needle is inserted perpendicularly.

We have made sub-dermal and intra-muscular injections. The superficial ones appeared more painful and often left disagreeable nodules. We have definitely chosen needles of four centimeters in length.

As to the precautions to be taken in these injections, we have followed the usual plan (soap, sublimate, ether, etc.). We have never imposed a rest in bed. After the injection a few rest a half-hour, nearly all continue their duties in the ward during the day. The out-patients left immediately after their treatments and none interrupted their work.

Cases Treated.—The applying of anti-syphilitic treatment indiscriminately to all cases would lead to hasty judgment as to the efficacy of the method. There are too many benign cases of syphilis that rapidly improve under the influence of a very anodyne medication, or even without any medication, for us to draw conclusions as to the value of the medication from a totality of the cases.

We have therefore chosen, primarily, cases which from the start appeared grave, rebellious, or had already resisted energetic treatment: Van Swieten's solution, enunctions, injections of bin-iodide and of calomel.

Encouraged by incontestible successes, we later tried to broaden the field of our experience, to observe more surely the drawbacks of the method.

We have therefore followed a parallel series of observations on ordinary syphilis treated with the same doses as were used in the first series.

These two series give us, both in the city and the hospital, a total of 49 cases. We have others under treatment.

Our first series on which we base our statistics, for reasons already given, comprises 31 cases.

We propose to publish, in extenso, their histories in a later memoir.

Results of the treatment have not been constant. They have been excellent, ordinary, and insignificant.

Our **excellent** and **ordinary** results (21 cases out of 31) deal with secondary syphilis of the ordinary or acneiform type, gummata, tertiary manifestations, hybrid cases of dermatoses grafted on old syphilides, para-syphilitic manifestations.

Failures.—Our treatment gave no appreciable result in 7 cases out of 31; the following is the résumé:

One case of syphilis complicated with seborrhea.

Two acneiform syphilides grouped in the form of a corymb.

One para-syphilis (tabes).

Three hybrid cases (chronic rheumatism, eczema, bullous eruption).

But it is just to remark concerning these failures that only two have any importance; these are the two cases of grouped acneiform syphilides. Furthermore, one of these two patients was slightly improved (at the end of the 22 injection one group has disappeared and the others are beginning to fade).

The other case was but very slightly changed after 48 injections, but the patient continued in his habits of alcoholism notwithstanding our surveillance.

In conclusion, it has appeared to us that the therapeutic action of the cacodylate of mercury was very slow in the cases of grouped papulo-crustaceous syphilides, which are also, unfortunately, the most refractory to usual methods. The patient whose syphilis was complicated with seborrhoids left the hospital after only 17 injections.

In the last four patients (para-syphilis or hybrid) the present affection was not modified, but the health was greatly improved.

Amongst our patients a few presented glossitis or buccal leukoplasia. We observed no notable amelioration in these lesions, but the treatment

was not carried on long enough for us to pass judgment on this point.

We have as yet observed no case of so-called nervous syphilis.

Accidents and Counter-Indications.—In over 1200 injections of cacodylate, we have yet to see veritable accidents. We can consider as such neither moderately acute and persistent pains complained of by a few cases, nor the presence of nodules which may persist for a longer or shorter period, but which generally disappear on the morrow. In the majority of cases the painful sensations disappear in an hour or two.

They vary with the cases, and according to days in the same cases. We have seen but two patients who refused the treatment as being too painful. It is true that one of them refused to follow an internal treatment.

All those who had before taken injections of cyanide of mercury or bin-iodide found the injections of cacodylate of mercury less painful than the former.

Once or twice a tingling has been felt in the leg.

The other notable accidents may be classed under these heads:

I. A case of arsenical pigmentation.

II. A case of temporary diarrhea.

III. A case of transitory stomatitis.

IV. A congestive spell with hemoptysis in a phthisical patient.

A fact to be noted is that all our cases presented a deplorable dentition, with gingivitis and often pyorrhea alveolaris, and that, notwithstanding all the pains we took in cleansing the mouth, we had a right to expect a large percentage of stomatitis considering the relatively large doses of mercury that we were injecting.

Concerning the patient affected with pulmonary phthisis, was the hemoptysis really due to the treatment? It is impossible for us to draw a definite conclusion on this point, but this unfortunate occurrence indicates that we should proceed with caution in such cases.

As a conclusion of the preceding cases we can formulate the following counter-indications to the use of the acid cacodylate of mercury injections:

I. An idiocyncrasy favoring skin-pigmentation.

II. Tendency to hemoptysis or congestive spells in phthisical patients.

III. Intestinal intolerance (of which we observed one case).

Advantages and Indications.—

I. The preparation of the idio-cacodylate of mercury which we employ presents, primarily, as we have already stated, the advantage of being an aqueous solution, miscible with the blood serum, with which it forms no precipitate, a most important property.

II. It is relatively painless, since it allows patients to continue their daily occupations. It is less painful than most other mercury injections.

III. It seems to possess a dynamic action capable of tonifying the patients, of combating loss of flesh and the tendency to neurasthenia. It even often provokes a notable increase in weight.

IV. It appears to exercise its efficacy in most of the cases of secondary or tertiary syphilis. It appears to us more efficacious than the usual methods in certain rebellious cases. It is really always very well tolerated by the organism.

The iodo-cacodylate of mercury therefore appears to be indicated when—

I. There is marked denutrition, loss of weight, or neurasthenia during the course of syphilis. This is the main indication.

II. We wish to influence persistent manifestations of the mucous membranes or the skin.

III. The case is complicated with peripapillary or psoriaform seborrhoids; perhaps in the eczema and psoriasis appearing in old syphilitics.

IV. When the treatment by the digestive tract is not tolerated and the patient will not resign himself to enunctions.

V. In tertiary syphilides, when you wish to institute an intensive treatment without resorting to calomel.

New observations will teach us if the injections of iodo-cacodylate of mercury are to be compared in point of efficacy, rapidity and durability of cure, to calomel, and if you can, when the latter is too painful, substitute the former for it.

It is difficult to exactly explain the efficacy of the iodo-cacodylate of mercury. Is it due to the arsenic? To the peculiar molecular state of the mercury? To the excess of iodine which it contains?

We shall try to solve these various questions in ulterior studies.

Verily, the action of the arsenic in syphilis has been felt for a long time, and it has been frequently ordered in this disease in pill or liquid form or as a medicated water, but the syphilographs have always given it a back seat and deny it all specificity. It is for them but an accessory drug which affects not the syphilis but some concomitant disease, such as dermatitis or malaria.

Never till now has it been given as a corrector of those neurasthenic states and organic depressions which so frequently accompany syphilis. We shall try to determine later if it does not exert a curative action upon the specific element itself.

Here is certainly a series of interesting researches to be carried on.

We intend to see what may be obtained with a mixture of cacodylate of soda and bin-iodide of mercury.

For the moment our experiments have been limited to the iodo-cacodylate of mercury alone.

Conclusions.

I. Under the name of iodo-cacodylate of mercury we do not designate a definite salt, but a preparation in which is associated, as the result of a special chemical reaction, as, I, and Hg. in the respective forms of cacodylate of soda, iodide of sodium and bin-iodide of mercury.

II. This preparation has the advantage of giving an aqueous solution, sterilizible at 120° C.,

miscible with the blood serum without the slightest precipitate.

III. It is well tolerated as intra-muscular injections, causing little or no pain and no abscesses.

IV. It is particularly indicated in syphilis when there is a marked denutrition, loss of flesh, and neurasthenia; in persistent secondary manifestations of the mucous membranes and skin; when there are seborrhoid complications; in tertiary manifestations and, lastly, when you wish to act energetically and at the same time respect the digestive tract.

PERNICIOUS ANEMIA IN THE LIGHT OF THE MODERN TOXIN HYPOTHESIS.

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(Continued.)

After these general contemplations on the genesis of pernicious anemia let us now examine some special symptoms of this disease.

It is not long since it was assumed that all pathological manifestations observed in pernicious anemia were but the consequence of the anemic condition of the blood. This supposition may be correct in quite a number of cases, but it is a question whether symptoms do not occur in pernicious anemia which are to be placed into a more direct relation to the toxins producing anemia.

It can easily be inferred from what has been said so far that, in my opinion, the changes in the osteomyelon belong to this category. As will be remembered, it was my endeavor to show that the toxins referred to extend their effect synchronously to the blood and the blood producing organs. Besides, this possibility has already been considered in my publication of 1894 on bothriocephalus anemia. It may be mentioned that I am not the only one to hold this view, for Lazarus (54a) expresses the same opinion in his recently published excellent book on pernicious anemia.

One symptom which all authors, without dissent, are inclined to ascribe to the effect of the toxin, is the increased disintegration of albumin. Our knowledge of this point is based principally, as is well known, to Eichhorst's (23) ureatitrations. To my knowledge there are as yet no investigations which fully answer modern requirements, if we do not take into account those of Bohland (11) which refer to ankylostomiasis. It would be interesting to learn whether there exists any parallel between the disintegration of albumin and hemocytolysis.

It has been suggested to count the peculiar changes in the spinal marrow occurring in pernicious anemia among the symptoms which depend upon a direct toxin effect.

Minnich (64b, p. 310) and Nonne (69) already have favored this opinion, and later this was seconded by others, for example Potren (79) and Lazarus (54a). These authors emphasized that the symptoms of the spinal marrow do not always occur *after* the appearance of anemia, but sometimes *synchronously*, and at other times even *before*. For this reason, and because similar changes have not up to now been observed in the other grave anemias, it appears likely to me, too, that they are caused by the same toxic influences which are the origin of anemia.

It is possible that retinal hemorrhage may also have to be taken into consideration here. This symptom may likewise occur in anemias which are regarded as posthemorrhagic—although comparatively seldom—but it has scarcely been observed in chloroses. It is possible that the origin of this symptom is also to be associated with the toxin effect.

Finally we have to mention here the changes in the intestinal tract. It is well known that several authors—Fenwick (31), Nothnagel (74), Ewald (29), Martins (63), Möller (67), Koch (51) and others—have described atrophic processes in the mucous membrane of the intestine as well as in that of the stomach, occurring in pernicious anemia. Formerly nobody doubted the validity of this report in the least, but recently voices have been raised which more or less decidedly mean to deny the presence of these changes, especially in the intestine. It has been contended that they must not be regarded as intravenal phenomena, but that they rather represent post-mortem manifestations, caused by processes of putrefaction and by meteorism in the cadaver—Gerlach (34), Habel (38), Faber and Bloch (30).

It cannot be denied that atrophied changes in the intestinal mucous membrane may be brought about in this manner. But, in my opinion, it is not at all demonstrated that the atrophy of the intestine which is found in pernicious anemia is of such origin. For how is it with the processes of putrefaction and the cadaveric meteorism in the last-named disease?

Von Hoffmann (42) emphasizes particularly that the amount of blood in the organs exerts a certain influence upon the development of the processes of decomposition, namely in such a manner that an organ is the more rapidly subject to putrefaction, the more blood it containes. As oligemia is undoubtedly the striking symptom in pernicious anemia, for this reason alone it may be surmised that decomposition cannot possibly be very rapid in this affection.

I found this supposition fully confirmed in the numerous cases of this disease which I have observed, and I noticed that the cadaveric meteorism was comparatively little pronounced. But, nevertheless, I obtained the impression that such a remarkable thinness of the intestinal well is found in almost no other disease than in pernicious anemia.

It may be said, incidentally, even if the atrophy of the cutaneous epithelium and the deficiency of the glands are the result of the above influences, that, at all events, it is impossible for the intense proliferation of the interglandular tissue to have the same origin, an occurrence which is particularly emphasized by Martins and Lubarsch.

Therefore it is my opinion that the objections raised so far to the theory of an atrophy of the stomach or intestine being present in pernicious anemia, are not sufficient to shake this view.

If this is, therefore, to be considered demonstrat-

ed, the question suggests itself, what are the relations between atrophy and anemia? Three possibilities are conceivable:

1. The atrophy is the cause of the anemia (Fenwick, Ewald, Martins and others).

2. The atrophy represents a sequel of anemia (Eichhorst, Möller, Koch and others).

3. Anemia and atrophy depend upon a common cause (Lazarus, Faber and Bloch).

1. Faber and Bloch admit the existence of an atrophy of the stomach in pernicious anemia, but they do not consider the presence of an intestinal atrophy demonstrated. If we assume that the atrophy is to be regarded the cause of the anemia, the fact impresses us at once that the changes pertaining to this case are not found in all forms of pernicious anemia. In order to explain this remarkable condition, the investigators who share this opinion establish a special "gastro-intestinal" form of pernicious anemia. They believe, while anemia in these cases arises upon an atrophic soil, that in others the affection develops from other causes.

Such a standpoint cannot *a priori* be objected to if one looks upon pernicious anemia in a general way. But if we consider particularly that form which presents the most obvious etiological conditions—bothriocephalus anemia—we cannot refrain from asserting the following points:

If the atrophic changes were a coöperating cause in this form of anemia, it is reasonable to assume that the atrophy could be demonstrated in every instance. But this is not the case. Möller (67), who made quite exhaustive researches in this respect, came to the conclusion that atrophic processes in the intestinal tract are frequent symptoms in bothriocephalus anemia, but by no means constant. There are, consequently, some bothriocephalus anemias which are not accompanied with an atrophy of the stomach or the intestine, and it follows that these changes are not a necessary condition for the occurrence of a bothriocephalus anemia.

If, however, the atrophy is not considered to be a primary process, it is really much easier to explain the inconstancy of its occurrence. We could then imagine, as Möller does, that the atrophy requires a certain length of time to develop, and occurs, therefore, only in long lasting cases. But, besides, the individual disposition plays a part here. The intestinal mucous membrane of some individuals reacts to the irritant that produces atrophy, that of others again remains refractory to this agent.

Therefore, if we cannot adjudge a "primary" significance to the atrophy, it remains to determine whether it develops under the influence of the existing deficiency of hemoglobin, or whether it is brought about by the same toxin which is the cause of anemia.

The latter supposition is more probable in my opinion. For, if the anemia as such were the cause of the atrophy, it is difficult to comprehend why atrophic changes in the gastro-intestinal tract are not observed in other severe anemias as well.

There are, for example, some chloroses in which the amount of hemoglobin has decreased as much as in the usual pernicious anemias, and yet, up to now, nothing is known of the presence of a gastro-intestinal atrophy in the former disease. As a matter of fact, it is true we are still less accurately informed about the anatomical changes in chlorosis than about those in pernicious anemia. But, to conclude from clinical observations, in chlorosis at least, atrophy of the gastric mucous membrane is not a frequent occurrence.

Of course I think in this respect of the results which were obtained by the chemical examination of the gastric contents.

On examining the gastric contents of eleven persons, suffering from severe bothriocephalus anemia, one hour after an Ewald test breakfast I found (89, p. 124) free hydrochloric acid in only one case, but in the other ten the signs of an almost complete achylia. An absolutely similar result was obtained by Cahn and von Mering (15), Hayem (40, p. 251), von Noorden (72), Martius (63) and others upon examining the stomach contents of individuals with ordinary pernicious anemia.

Quite different results , however, are reported by investigators who examined the gastric contents of chlorotic patients.

Considering the numerous results of investigation in this direction, von Noorden says: "There can no more be a question of deficiency of hydrochloric acid as a constant accompanying symptom. Often, possibly overwhelmingly often, the hydrochloric acid is increased in a chlorotic stomach; sometimes values have been observed which do not occur in any other disease."

Even in the gravest traumatic anemias the secretion of the gastric juice seems to be in the same condition as in chlorosis—Hayem (40, p. 252).

Considering these facts, we are entitled to assume that a simple anemia, even if it be very severe and long lasting, does not generally lead to an atrophy of the mucous membrane of the stomach, and consequently, that the gastro-intestinal atrophy, which occurs in pernicious anemia, is probably caused by the same toxin which produces the anemia itself.

Anemia and atrophy are, therefore, coördinate effects of the same cause.

This opinion, as far as I can find, has formerly been held only by Lazarus, Faber and Bloch, but they arrived at it partly by reasons different from mine. Some of Lazarus' arguments are, in my opinion, not quite unobjectionable.

Opposing the view that the atrophy is the cause of anemia, he refers, among others, to the fact, elicited by me, that the deficiency of HCl often persists after the cure of a bothriocephalus anemia. If the affection of the stomach would be the cause of the anemia, says Lazarus (54a, p. 148), the symptoms of the former would have to disappear, before the latter could give way. But he does not consider that the presence of a bothriocephalus is always to be regarded the first and most important condition for the appearance of a bothriocephalus anemia. If the parasite is expelled, there is nothing opposing the supposition that the anemia may dis-

appear, although the atrophy of the stomach remains.

I have now discussed the most important of the symptoms which, in my opinion, refer to a direct effect of a toxin. It is true, some others occurring in the circulating blood might be mentioned here, but I prefer to speak of them in connection with the other blood changes.

The remaining symptoms taking place in pernicious anemia are almost exactly the same as those which are generally found in other severe anemias; thus, for example, the symptoms in the circulation, and, among the subjective disturbances, the general lassitude, the vertigo, the headache, the tingling of the ears, etc.

In a differentio-diagnostical respect the following view points may, by reason of what has been said, claim a certain amount of attention.

If in a case of severe anemia a normal or hypernormal secretion of the gastric juice is demonstrated, the presence of a pernicious anemia is not probable. But if an achylia is proven, this speaks decidedly more in favor of a pernicious anemia or of a latent carcinoma than of a chlorosis.

Severe anemias, which are accompanied with retinal hemorrhages, belong generally to pernicious anemia, also those which are associated with symptoms of the spinal marrow. The absence of retinal hemorrhages, to say nothing of spinal marrow symptoms, can, of course, not outweigh this.

7.

I will now enter upon the discussion of the blood finding.

As is known, the number of erythrocytes as well as the amount of hemoglobin may decrease in pernicious anemia to such values as are but rarely observed in other anemic conditions. But in that case it appears that the former factor decreases frequently to a greater extent than the latter, so that the average blood corpuscles contains a hypernormal quantity of pigment; in other words, the color-index or hemoglobin value is larger than normal—Hayem (39), Laache (52a) and others.

As can be inferred from what has been said, this reduction depends probably upon an excessive destruction of the red blood corpuscles caused by the toxin. But what causes the increased pigment of the erythrocytes, we are not able positively to explain as yet.

Ehrlich (21) believes that this enigma is most easily solved by the embryonal mode of the blood formation, by the type of the megaloblasts. But with this dictum he does not touch upon the point, he does not disclose the deeper cause of the symptom.

In order to approach it a little more closely, von Willebrand and I (92) have lately taken the liberty to offer an explanation which is based on the following reasons.

In consequence of the increased destruction of red blood corpuscles in pernicious anemia, abnormally large quantities of disengaged iron are deposited in the inner organs of the body, principally in the liver and in the spleen. We are now justified in surmising that this iron may be used for the formation of the hemoglobin molecule, thus—provided the other conditions necessary for the formation of the pigment are complied with—the possibility is created for a more abundant production of hemoglobin and, consequently, the erythrocytes may absorb a larger quantity of pigment than usually.

Lately Tallqvist has tried to furnish an experimental support for this hypothesis.

He produced a grave anemia in dogs by administration of pyrodin. The drug was given to some in two or three large doses, to others (two) in repeated, small doses. In the former he obtained an acute anemia *with*, in the latter a chronic anemia *without* hemoglobinemia and hemoglobinuria, and, while in the former the siderosis was of a very high degree, it appeared to be a comparatively slight one in the second series.

After ceasing the administration of the toxin, in both series a regeneration of the blood set in, and some very remarkable differences appeared in the two different forms of anemia.

In the chronic form the amount of hemoglobin was hypernormal throughout; in the acute it was so only at the beginning of the regeneration and decreased later to below the normal.

The duration of the regeneration, again, was much longer in the acute than in the chronic anemia. If only the restitution of the hemoglobin amount is taken into consideration, it required twice as much time in the acute cases than in the chronic; and that although the intensity of the anemia was the same in both series.

The author ascribes such differences as observed during the regeneration to the fact that the body, at the commencement of convalescence in the chronic cases, had at its disposal larger amounts of reserve iron than in the acute and that, consequently, the conditions for the re-formation of blood were more favorable in the former than in the latter cases. According to Tallqvist (99, p. 84), there is no room for any other explanation; but it seems to me, it is very obvious to assume that the inequality of dosage of the poison might have caused the difference.

Such a thought is forcibly impressed upon us, if we consider Bettmann's results from investigations of arsenic intoxications.

This author has demonstrated, as is known, that an essential difference can be observed according to its administration in large or small doses. In the latter case the lymphoidization of the medulla occurs quicker than in the former, and furthermore, in the latter case prevail regenerative, in the former degenerative changes.

But there are other facts which are most decidedly in opposition to Tallqvist's standpoint.

von Ott (75, p. 158) has made an observation in Cohnheim's laboratory which is of the greatest interest. He found that, if after venesection the amount of blood tapped is fully replaced by a transfusion of blood, the regeneration requires twice as much time as if only a physiological salt solution is injected.

This finding, the correctness of which is confirmed both by Hayem and Landerer (53), shows most strikingly that the reserve iron must not, in every instance, have a favorable effect upon the blood

formation. Because, although an increased deposit of iron is taking place here in consequence of the destruction of the transfused blood corpuscles, the duration of the regeneration is longer, nevertheless, than under circumstances in which no such deposit has occurred.

Possibly a result of investigation reported by Bierfreund (6) may also be explained in the same direction. This author has tabulated 44 cases of subcutaneous and cutaneous hemorrhages and demonstrated that the duration of the regeneration was the same in both series.

From all these reports I regret I have to admit that Tallqvist's results, instead of convincing me of the correctness of my hypothesis, have almost accomplished the opposite.

Another fact has still further augmented my doubts, namely, that the increase of the hemoglobin value occurs *immediately* after the application of the first dose of the toxin in Tallqvist's experiments. How is this fact to be explained from the standpoint of the author? It is scarcely conceivable that this increase could be produced by the iron deposit which is brought about by the enhanced disintegration of blood corpuscles. The author himself remarks we have to assume that a certain length of time has to elapse, before the iron, which is derived from the destroyed pigment, becomes again serviceable for the assimilation.

But if, therefore, the hypernormal hemoglobin value does not depend upon the pathological siderosis, it is a question, whether we are at all able to conceive the cause of this symptom.

The following consideration may, perhaps, to a certain extent assist in elucidating this point. Attention may be drawn to the fact, that there are pathological conditions in which an increased disintegration of blood corpuscles occurs and, in consequence, a depositing of reserve iron takes place, but in which the hemoglobin value, notwithstanding, is not increased; on the contrary, it is reduced. Such affections are, for example, tuberculosis and malaria. If the objection is raised that there are factors in these diseases which immediately interfere with the production of hemoglobin, the possibility cannot be denied that the obstructing principle is represented precisely by the toxin which here causes the destruction of the erythrocytes. In other words, I mean that of two poisons which both lead to the deposition of reserve iron, one may concur in the origin of an increased hemoglobin value, the other, however, may produce a decrease of this factor.

Consequently it is not the intensity of the siderosis, but, in the first place, the character (respectively the quantity) of the pathological toxin which is determining for the amount of the hemoglobin value.

If we then consider the morphological changes of the blood, we must at once acknowledge that at present it is almost impossible to explain its origin in a satisfactory manner. The conditions are comparatively most simple in regard to the *varying size* of the erythrocytes.

As is known, we observe in pernicious anemia, besides blood corpuscles of normal diameter, others, on the one hand, which are only a part of the ordinary erythrocyte, and again such, the diameter of which is much larger than normal (16-18 microns). It is true, similar differences in size occur in other pernicious conditions also, but they are only rarely observed as pronounced in any other disease as in pernicious anemia. From what I have seen (89, p. 140), the number, both of the small and the large blood corpuscles, is increased at the expense of those of medium and normal size. But the quantity of the cells belonging to the different categories is exceedingly varying in the separate cases.

The same as Quincke (80, p. 20), Ehrlich (20, p. 79) I take the small blood corpuscles or so-called microcytes to be fractions of red blood cells, and the large erythrocytes or so-called macrocytes, on the other hand, young discs which developed abnormally under the influence of the toxin.

I support this view principally by measurements of diameters which I have taken (89) in bothriocephalus anemia. It was then seen, that in the course of the regeneration the number of the microcytes steadily decreased and the macrocytes gradually increased.

I do not think any other explanation of this observation permissible, the less so, because later measurements which I took with Rosenqvist (90) in post-hemorrhagic anemia, and with von Willebrand (92) in chlorosis, yielded an analogous result, a result, by the way, which is further confirmed by von Willebrand's (103) recently published studies on the blood changes after venesection, and by Tallqvist's (99) investigations of these conditions in some experimental toxin anemias.

What other explanation could finally be taken into consideration here?

It can scarcely be seriously imagined that the *old* erythrocytes, which circulate in the blood, could increase in size in consequence of a probable change of the plasma. According to this theory the average diameter, after venesection, should in the very first stage of the regeneration, when changes of the plasma are most pronounced, be larger than in a later period, when, as far as our present knowledge goes, the condition of the blood has already considerably improved—compare von Willebrand (103, p. 65). But this is not the case, as we know that the size of the average diameter generally increases during the entire first half of the convalence, sometimes even later.

It should further be taken into account, that, during the entire time of regeneration in chlorosis, the large erythrocytes appear decidedly more colored than the discs which previously circulated in the blood. How would it be possible to explain this abundance of color, if the large blood corpuscles were old cells? They cannot possibly acquire a brighter color by simple swelling.

Last, not least, it is to be considered that, at least in pernicious anemia, including bothriocephalus anemia, typical macrocytes have been demonstrated at the place of formation of the blood corpuscles—in the bone marrow.

In my opinion it is therefore proven that, in pernicious anemia as well as in other anemic conditions, the small corpuscles represent fragmentary cells (respectively old cells), while the others are young discs abnormally developed. That the macro-

cytes are generally larger in pernicious, than in other forms of anemia, probably depends on the fact that the toxin of the former affection promotes the growth of the erythrocytes more than that of the latter.

Even those of my readers who are not so well versed in hematology will not fail to observe that this conclusion is diametrically opposed to Hayem's doctrine of the significance and character of the small blood corpuscles. According to this view they are young blood discs in the course of development or transitory forms between hematoblasts (blood plaques) and fully developed blood cells.

Hayem, as is well known, based his view, which is still much in vogue in France, upon measurements of diameters during convalescence after venesection. The same as some other authors, but contrary to me and my co-workers and several other investigators (compare von Willebrand) he claims to have observed an increase of the number of microcytes in this instance. It would be too much a digression if I were to enter upon a detailed explanation of the cause of this divergency. I can here only refer to the definition which Rosenqvist and I (90, p. 334) published in a recent paper. At all events, Hayem's hypothesis, already previously attacked for various reasons, should be considered finally disproven by the results of investigations mentioned above.

If, then, my standpoint in regard to this question is correct, it may be admissible to use the number of micro- and macrocytes as a scale for the intensity of the de- and regenerative processes. Accordingly, a small number of microcytes would indicate an insufficient ability of reaction of the bone marrow and, therefore, a comparatively unfavorable prognosis; a large number, on the other hand, would mean a lively reaction and consequently a comparatively favorable course of the pathological process. But the fact should be kept in mind that a vivacious reaction of the bone marrow may be caused by the virulence of the toxin. Consequently, the direct prognostic conclusions, which may be drawn from the size of the erythrocytes, will not be very far-reaching. On the other hand, it may be permissible simply to conclude upon a regeneration of the blood taking place, if a large amount of macrocytes is found in the blood. If this symptom occurs in icteric patients, however, the possibility is to be considered that the icterus may be the cause of the increase in size—Gram (35), Engelsen (27).

Vice-versa a decrease of the average diameter with the appearance of a large number of microcytes would be indicative of an enhanced destruction or a defective re-formation.

As to their shape, the red blood corpuscles in pernicious anemia show also a remarkable deviation from the norm. The majority of them have lost their round form, as a rule; some are pearshaped, others again hammer-like, etc. But it must be observed that, similar to most of the other symptoms in pernicious anemia, the variations in the shape of the erythrocytes are subject to material fluctuations in the different cases. The case I described on page 174. (September issue this Journal) proves that the change of form and size may be almost entirely absent.

It is yet unknown to us what causes this so-called poikilocytosis, but there is not much chance of an error to presume that it is also due to the toxin circulating in the blood. It remains still doubtful whether the poikilocytes and microcytes generally originate in the blood or in the bone marrow. I, for my part, can only say that in preparations of bone marrow, taken from persons who died of pernicious anemia, both poikilocytes and microcytes have been observed.

Among the morphological changes in the blood, the occurrence of nucleated red blood corpuscles in the circulation occupies a prominent place.

As is well known, the megaloblasts are said to be especially characteristic of pernicious anemia (Ehrlich), but normoblasts may occur besides them.

The number of the nucleated cells is exceedingly varying, not only in the different cases, but also in the same case on different occasions. Sometimes these elements are so numerous that they can be found at once, at other times again a number of preparations is to be examined carefully before a single one is met. In fact, there are undoubted cases in which neither megaloblasts nor normoblasts can be demonstrated in spite of the greatest painstaking. Ehrlich has seen such cases twice, and the case reported by Engel, also my own, described above, belong into this category.

If these cases are classified as pernicious anemia —and this can scarcely be avoided—the possibility contended by some authors is rather illusive to diagnosticate pernicious anemia with absolute certainty from the condition of the blood *alone*. And how could it be otherwise? How many aections are there at all in which one symptom is in itself sufficient for a positive diagnosis? This fact is not surprising, if we consider, that the inequal ability of reaction of the body, or rather of its different organs in association with the varying intensity of the pathological virus, must of necessity cause a great vicissitude in the symptoms of a disease.

Concerning especially the conditions in pernicious anemia, the possibility is, besides, to be taken into account here that the toxin is not of the same character in every instance. Therefore all kinds of changes in size and shape of the erythrocytes may occur in this disease, and the number of the nucleated red blood corpuscles may vary to such an extent, that in some, though rare, cases they may be transitorily or permanently absent.

Therefore I contend that the microscopical examination of the blood, in spite of its vast importance for the diagnosis of pernicious anemia in most cases, may be misleading, if we base our conclusions *exclusively* on its results, and cling to the fact that poikilocytes, megaloblasts, etc. represent an absolutely necessary postulate for pernicious anemia.

But enough of this subject. What is the cause, that nucleated red blood corpuscles appear in the circulation of the blood, and why is it, principally, that in pernicious anemia corpuscles of a megaloblastic type are observed in it?

Until quite recently this subject has been considered mostly from a teleological point of view and it was assumed that the prevailing oligocythemia

should be partly equalized by influx of immature cells. But this is not the case. No congruency exists in bothriocephalus anemia between the total number of erythrocytes and the quantity of the nucleated blood corpuscles, and no such parallel has ever been observed in the other forms of pernicious anemia.

Consequently there is no apparent reason to uphold this mode of explanation, especially as it does not give us any information regarding the real and final cause of the symptom, in keeping with other teleological hypotheses.

But what, then, is to take its place? It may here possibly be the question of some kind of chemotactic influence.

To support such a supposition, the fact could be brought to bear that nucleated erythrocytes may occur in the blood without the presence of an anemia under the following circumstances: In phosphorus or chloroform intoxications—Ehrlich (20, p. 97), in injections of bacteria proteins—Rieder (83, p. 192), or of ichoric substances—Timofejesky (100, p. 110), and in septic conditions—Dominici (18, p. 472).

How does it happen, then, while in most of the other anemias almost nothing but normoblasts is observed in the blood, that in pernicious anemia megaloblasts are found as well?

The answer to this question is evidently to be found in the fact, that in adults generally only normoblasts are formed in the blood in the former case, in the latter, however, at the same time erythrocytes of the megaloblastic type in the *bone marrow*. As megaloblasts occur also under physiologic conditions in fetal life, the formation of blood in pernicious anemia therefore is distinguished—as emphasized principally by Ehrlich—by a falling back into the embryonal type.

At present it cannot be determined with certainty what causes this atypical formation of blood in pernicious anemia.

In my work on bothriocephalus anemia I have already emphasized the fact that the large erythrocytes occurring in this disease are probably formed under the influence of the specific toxin circulating in the body, and in keeping with the preceding explanation I still adhere to this opinion. That it also holds good for the nucleated large blood corpuscles or megaloblasts, is possibly indicated by a symptom which we meet in bothriocephalus anemia. During my researches in this direction I found regularly that the megaloblasts disappeared very soon after the worm cure, i. e., after the removal of the toxic cause, while the normoblasts persisted in the blood for a much longer time. A similar condition was observed in the case of severe bothriocephalus anemia described by Askanazy (3).

This view of the cause of the megaloblastic change of the bone marrow is also shared by Ehrlich and Lazarus (22, p. 43).

Concerning the mutual behavior of megaloblasts and normoblasts, this theme has been discussed quite extensively of late. It has been contended, on the one hand, that they are fundamentally differentiated forms of cells—Ehrlich (21), H. F. Müller (65), and, on the other, that there is no fundamental difference between them—Schauman (89), Askanazy (3), Pappenheim (76).

As Ehrlich in his recent publication (22, p. 38) still clings to his view, in spite of the objections which were raised, we will investigate why he does so.

There are three factors which he dwells upon: 1. "the further fate of the nuclei;" 2. "their morphological differences;" 3. the clinical observation.

Ad 1. Leaning upon the view of Rindfleisch (84), Ehrlich teaches that in the transformation of normoblasts into denucleated structures the nucleus of the former is expelled *in toto*, while in the megaloblasts it disintegrates within the body of the cell and dissolves.

In opposition to this Askanazy (2 and 3) and I (89) emphasize that, to our experience, the disappearance of the nucleus of the megaloblasts probably takes place in the manner described by Ehrlich, but that well founded doubts remain as to the manner of the transformation of the normoblasts into denucleated elements.

It is true that we have also seen microscopic pictures which appear to show the expulsion of the nucleus, but we have, besides, demonstrated the signs of an undoubted disintegration of the nuclei within the normoblasts. Does such a finding intimate that the denucleation of the normoblasts may take place in a twofold manner (Pappenheim (76, p. 75),), or would it not be more reasonable to suppose that one of the two kinds of transformation does not really exist, but is brought about by pressure in the making of the preparation?

I believe the latter to be the case.

Then it will be the question which of the two kinds of denucleation is the deceptive one, as a consequence of the preparation. It is more probable for an expulsion of the nucleus to occur—Neumann (68, p. 431)—than a disintegration of the latter by pressure from outside. I believe, therefore, that the transformation of the nucleated erythrocytes into denucleated structures—immaterial whether it is a question of normoblasts or megaloblasts—is caused by a disintegration of the nucleus, and agree, accordingly, with Askanazy and Pappenheim in this respect.

Ad 2. It is unquestionably to be admitted that there are striking differences between the nuclei of typical normoblasts and of megaloblasts. But, as I have emphasized years ago, there are so many transitory forms between these extremes, that it is often difficult for the observer to determine whether a nucleated erythrocyte is to be considered a normo or a megaloblast, more so because the marks of differentiation which the body of the cell presents are generally still less characteristic than those of the nucleus.

Ad 3. Ehrlich condenses his conclusions as taken from clinical observations as follows: "All attempts to efface or even absolutely to deny the difference between megaloblasts and normoblasts are frustrated by the coarse clinical fact, that the blood is megalocytic in pernicious anemia."

But this dictum is not founded as securely as Ehrlich assumes. We have only to remember the case cited by me on page 174, in which not only

nucleated erythrocytes and poikilocytes, but also megalocytes were entirely absent in the circulation. It may be said that this case cannot be classified as pernicious anemia—compare Lazarus (54a, p. 158).—In this case I take the liberty to call attention to an observation, the value of which will scarcely be depreciated by anybody, namely to the fact that the blood is not necessarily always megalocytic in bothriocephalus anemia.

In several of my cases of this kind, the number of the megalocytes was an extremely small one, sometimes only one to three in 100, and in two cases (Nos. 48 and 49) their percentage is marked as *nil* in my tables, *i. e.*, among the 200-300 cells measured, not a single blood corpuscle of 10 *microns* was found. In case 48 the number of cells next in size, viz., 8.75 microns, was even less than normal (only 18 per cent. instead of about 30 per cent.), so that in this instance it was most overwhelmingly the question of truly small forms.

It is not intended to deny that, in spite of the results of the measuring, some large erythrocytes might have been present; and that they actually existed was proven by the fact, that after a very careful search one or two megaloblasts were observed in stained preparations. But this finding does not change my standpoint, for single specimen of megaloblasts have also been found in chlorosis and leukemia, although the blood is not megaloblastic in these affections.

Besides, special stress is to be laid on the fact that in bothriocephalus anemia normo- and megaloblasts occur synchronously in most cases (89, p. 145).

We have now looked into the further fate and into the morphological peculiarity of the nuclei of the erythroblasts, and have also examined what clinical experience teaches us in this respect. In carefully surveying what has been said, the conclusion is scarcely justified that there is a fundamental difference between normo-and megaloblasts.

I rather believe, by reason of the above, that in the megaloblastic transformation it is only the question of a simple metaplasia. The normo and megaloblasts originate, in my opinion, in the same mother cell in the hematopoetic apparatus. This mother cell, through the influence of specific agents, in its further development undergoes changes which, according to the intensity of the irritant and the individual ability of reaction of the blood-making organs, become more or less high-graded.

In some persons the bone marrow is absolutely refractory to such irritants, in others a more or less pronounced reaction occurs in certain parts of the organ, and in others again the greatest part of the same may respond to the irritant with a megaloblastic transformation. Accordingly, it may in this case happen that either *only* normoblasts, or *only* megaloblasts are formed, or *both* normo- *and* megaloblasts, but the formation also of cells may take place which as to structure are about midway between both types. In this manner I believe I have best taken into consideration the actual conditions, for it is not necessary, accordingly, that typical megaloblasts should be found in the blood of every case of pernicious anemia.

Ehrlich also emphasized particularly "that the megaloblastic transformation represents a very inappropriate event."

To prove this assertion he quotes two factors in the paper which he published jointly with Lazarus (22).

In the first place they emphasize that "the new formation of red blood corpuscles of the megaloblastic type is a much slower one." This is made apparent by the fact "that the megaloblasts always occur in the blood in small numbers only, while the normoblasts . . . . are frequently found in very large quantities." Consequently "crises of the blood" are not observed in megaloblastic anemias."

Now the question is permissible whether it is right to draw conclusions upon the intensity of the new formation of the blood from the number of the nucleated erythrocytes appearing in the circulation.

I doubt this, and Lazarus himself says also (54a, p. 113), "it should not be lost sight of that the presence of numerous megaloblasts in the bone marrow does not at all condition their occurrence in the circulating blood." In endorsing this dictum I take the liberty to draw attention to the following two facts:

1. A very lively production of blood corpuscles may take place, although no nucleated erythrocytes can be demonstrated in the blood. This is the case in the convalescent stage of several anemias. Thus I (89, p. 185) was able to show that the number of the nucleated blood-cells in bothriocephalus anemia is generally largest during the acme of the disease, and gradually decreases during convalescence until they have entirely disappeared from the circulation when the erythrocytes number about three millions. At the same time it should be remarked that the regeneration of the blood sometimes appears to be more lively during the last stage of convalescence than during the first.

After venesection the number of the nucleated cells reaches its maximum during the acme of the anemia—Schauman and Rosenqvist (90), v. Willebrand (103)—and in chlorosis these formations will be observed but extremely seldom, if at all, during convalescence.

2. The appearance of numerous erythrocytes in the blood, *i. e.*, the blood crises, is, in a prognostic respect, not of the favorable significance which Ehrlich attributes to the same. To prove this I only wish to refer to the fact, that Askanazy (3) has seen blood crises in a case of cancer ventriculi, and I (89, p. 186) in a patient suffering from bothriocephalus anemia who succumbed to the disease on the following day. v. Noorden (73, p. 37), who first described this symptom, says also that it coincides as often with deterioration as with improvement of the amount of hemoglobin and the general state of health.

Ehrlich maintains, in the second place, that the megalocytes which originate from the megaloblasts represent a type not in keeping with anemia conditions, because they possess a small respiratory surface in proportion to their volume, which fact is the more obvious, if we consider that the schistocytosis represents an appropriate event.

It is probable, but not at all proven, that the

microcytes suffice better for the purpose of respiration than the normocytes. Besides, the supposition is obvious, that megalocytes principally furnish the material for the production of microcytes, for in pernicious anemia these two forms of erythrocytes are mostly found synchronously and comparatively seldom separately—compare Schauman (89, p. 140). Consequently it may be correct to contend: no microcytes without megalocytes.

(To be continued.)

THE IMPORTANCE OF THE X-RAYS AS A MEANS FOR THE EARLY DIAGNOSIS OF TUBERCULOSIS,

By ESPINA Y CAPO, of Madrid.

Mr. President and Gentlemen:—

I must be very brief, because I am in the city where "time is money," and furthermore because my purpose is solely to obtain for radiography and radioscopy their free use as means of diagnosis in tuberculosis.

My work comprises three parts: firstly, radioscopy; secondly, radiography; and thirdly, the technique of both in relation to tuberculosis. In the first part I shall speak of radioscopy in cases of sound and tubercular lungs; in the second of the use of radiography in the different stages of the disease, whilst in the technical section I shall refer to the best method of obtaining the best results in both.

Radioscopy.—Radioscopy as a means of diagnosis in tuberculosis has constituted since its appearance in the clinical field, one of the means in which the greatest hopes have been placed, so much so that since the fourth congress on tuberculosis held in Paris, it has been considered the equal both of percussion, superficial and profound, and of auscultation.

In that fourth congress, however, we could not speak so affirmatively because we were not yet in possession of positive instances which would leave no room for doubt. Today it is already impossible to detract from this potent means, admitted as such in all countries and by all practitioners.

Partisan as I am of the parasitic doctrine, I will not treat of the radiographic diagnosis of open pulmonary tuberculosis, because the analysis of sputum, and the presence in it of the bacillus of Koch, affirm so positively the existence of tuberculosis, that no physician can detract from this method. Radioscopy, in the case of open tuberculosis, serves only as a potent means of settling the topography of the lesions, and although this is very important, it does not deserve to fix our attention, because we prefer to employ our time studying the true use of the X-Rays in the diagnosis of pulmonary tuberculosis in its first period full of doubts, and in which therapeutical intervention, being more rapid and convenient, is also more efficient.

There is another question of transcendent importance, in which the X Rays have assisted our investigation with such clearness, that this peculiar aspect of the question justifies our fixing it in our attention. I refer to glandular tuberculosis, the commencement, in many cases, of pulmonary tuberculosis, and in all the inseparable companion of the disease.

Apart from the data given by all authors in explanation of the changes of color from which the radioscopic image of the lungs suffers in the incipient, settled, and cavernous stages, we shall not refer to them, because at this Congress we are obliged to present subjects of some novelty. I am going to mention, however, two circumstances, which I believe, perhaps through ignorance, possess that peculiarity, and which we can only observe, especially one of them, by radioscopy.

Radioscopy constitutes a powerful means of studying the dynamic forces. It is not possible to see by radiography all the functions and all the movements that characterize each function. For this reason the normal pyhsiology of, for example, a joint during the different phenomena which constiute movement and action, can alone be seen on the fluoroscopic screen, an impossibility with the radiographic plate.

The two phenomena to which we are about to refer appertain to actions of organ in a state of movement, and for that reason can only be observed by radioscopy. The first is the heart. Ever since Wells drew attention to the diagnostic value of tachycardia, all specialists and those who devote themselves specially to the study of tuberculosis, have set great store upon this datum, raising it to an important position in the early diagnosis of tuberculosis. One of the most efficient means of verifying this datum is by fluoroscopy. As we never lose sight of this diagnostical resource in our department of tuberculosis, we can affirm, in an indubitable manner, that, with the fluoroscopic screen, the datum of Wells is seen in more than 94 per cent. of cases of tuberculosis, with so much clearness as to remove all doubt on this subject. I shall, moreover, refer to a sign which, I think, has not been touched upon by other authors, namely, that this tachycardia is not rhythmical.

There is another sign on the heart of the tuberculous, but we shall study it when we treat of radiography.

The second example that may be taken for radioscopy, being essentially functional, and one which we have not seen referred to by any other author, appears to our observation with as much, or even more, constancy than thachycardia. We refer to the visibility of the diaphragmatic excursion, both in inspiration and expiration, a phenomenon that, as is easily understood, can be appreciated neither by common means of exploration nor by radiography.

This phenomenon, which under normal conditions is rhythmical and symmetrical on both sides, in tuberculosis is neither rhythmical nor symmetrical. We have observed that in tuberculosis the diaphragm does not rise to the same height on the sick as on the healthy side, and that when the two lungs are affected the ascension is shorter on the worse side; in such manner in the case of a tuberculous patient whose diaphragm on one side has no ascension, or where it is very short, we deduce from this the correspondingly greater or impermeability of the lungs.

Radiography.—Accepting also in the case of radiography of tuberculous lungs, as much as we have related respecting the several degrees of transparency and depths of shadows in the first stages, darkness in the tract of the ganglionic and lymphatic vessels, opacy in the congested lung, and very great transparency of the caverns, we shall only say with regard to radiography that it is possible with it to discover the data, also of a certain novelty, in the radiogram of the tuberculous.

In our remarks on tachycardia when dealing with radiography, we said that the heart gives a sign easier of record by radiography than radioscopy. Since the adoption of this valuable means of diagnosis, the small size of the tuberculous heart has attracted our attention, being a true cardiac hypotrophy. If this, as we believe, is a positive indication of tuberculosis, we shall arrive at a definite early diagnosis with greater ease if we find in our radioscopic and radiographic exploratons small heart, especially if the investigations are accompaned by tachycardia: moreover, we have an explanation of the relations existing between the smallness of the heart, arotic narrowness, and the frequency of tuberculosis in such subjects, which detrmine the rule existing among these phenomena.

Another datum that may be observed is the peculiar shape of the intercostal spaces. In other works relative to the same matter, we have referred to the difficulty of performing percussions on tuberculous patients.

The causes of this difficulty are two: the first the extreme narrowness of the intercostal spaces, it being impossible to place the fingers between the ribs, and the second the conical form of the tuberculous thorax. Now before the appearance of the Röntgen method we could hardly understand these difficulties, but since the clinical adoption of this new system, the reasons became apparent. In the radioscopic image is observed a disposition of the ribs strong-

ly resembling the peculiar arrangements of roof tiles, in such a manner that the inferior rib almost touches the anterior face of the inferior rib, the intercostal space being so small, particularly from the fourth rib downwards, that it is difficult to place the finger upon which percussion is made. With radioscopy this disposition of the ribs is very clear, and the functional phenomenon corresponding to the diminution of the respiratory excursion in the tuberculous, impossible of diagnosis in any manner, is very evident.

As we see, radiography permits us to know data of transcendental importance in the life, in the functional, in the active, and for this reason it is not possible to prescind from this recourse in the diagnosis of tuberculosis.

Radiography.—The transient nature of the radioscopic image, and the necessity of taking it permanently, emphasizes the need of closely following with radiography the datum described in radioscopy. It is true that radiography cannot give us any data of function, but in exchange, with this second method, anatomical acts remain permanently indelible, as a book ever open to study.

Amongst the most interesting facts that we can select from our experience in radiography are the deformities of the bones characteristic of tuberculous thorax. There are in the thorax certain bones, which for their bearing on respiration and also from the muscles that originate from them, are organs of transcendental importance in the osseous respiratory apparatus. They are the clavicle and the scapula. Their position, form and size also produce very important modification in tuberculosis.

In taking a radiograph of a tuberculous subject, we see the modifications of these bones; the clavicle principally presents an augmentation on the inflection of its external extremity, and resembling a hyperplasia, but without being sufficient to constitute an alteration of the tuberculous epiphysis, takes the shape of the head of a mace. The scapulae are higher, and the internal and superior vertex is more elevated, swinging towards the centre the point and internal edge which are raised on account of the peculiar disposition of the ribs and spinal column.

Without entering into the pathological physiology of these facts, which entirely depends upon the great respiratory necssities of the tuberculous, united with the reduction of their respiratory field, we must remark that radiography shows these pathological heteromorphisms with great clearness.

The roof tile disposition of the ribs, of which we have spoken before in speaking of radioscopy, can be seen in an evident and clear manner by radiography.

Besides these deformities of the skeleton, radiography also shows us the small size of the heart. Respecting this organ radiography has achieved wonders, not alone in tuberculosis, but as to its real situation; but putting aside this latter fact, and circumscribing also those data which we can recognize in tuberculosis by the heart, we shall mention two that have, we think, a certain novelty and importance.

The first is the greater extension of the heart towards the lines of Traube and Friedreich on the right side, this fact showing, in our opinion, a compensatory insufficiency of the tricuspid valvula, and, for that reason, ventricular hypertrophy on the right side; the radiographic image of the tired heart in tuberculous persons thus acquires a strong resemblance to the image of the tired heart of the emphysematous.

The second datum refers to the special form of the heart of the tuberculous, similar to the foot of a Chinese woman, in its left ventricular border, remembering the growth of the deformed foot of the Chinese.

Respecting the lungs the facts of the first, second and third periods are so classic that we do not consider them worthy to occupy your attention: for our part they are simply confirmative of what we related in the IV. Congress held in Paris.

Technique of Radioscopy. To observe the wonderful phenomena of radioscopy under the best conditions of visibility, complete darkness is necessary, suppressing it until the light is produced by the Röntgen tube: for this purpose we have had a special box constructed, to conceal the light completely, provided with a simple mechanism adaptable to any exploration that may be necessary.

Another trouble that must be got over is the difficulty of applying the fluoroscopic screen, which is commonly rigid and mounted in a frame. In this form the screen can, in tuberculous cases, only be applied upon the sternum or upon the internal edge of the scapula. It is known that in radiographic images size and intensity depend upon the distance between the part under observation and the surface of the screen, so that with rigid screens it is not possible to obtain a corresponding equality of definition and intensity all over the surface, and to obtain such a result it is necessary to use a flexible screen mounted on cardboard in such a manner that it can be adapted to the convexities of the thorax. One of our colleagues, a very competent person in these matters, Doctor Redondo, Fleet Surgeon of the Spanish navy, advises the employment in radioscopy, as a radioscopic screen of the strengthening screen whose image resembles in depth of tone the radiographic image, and gives as fine a detail as the ordinary fluoroscopic screen.

This application of the strengthening screen makes the solution of the problem easy, because it avoids having to change in the laboratory the fluoroscopic material, of which, as we have said before, the rigid screen is constructed.

This last modification of the fluoroscopic technique is relative to the examination of patients that must have fasted previously, to obtain with more clearness the semi-lunar space of Traub, and to observe with greater ease the phenomenon of the diaphragmatic excursion previously referred to.

Radiographical Technique.—For some time we have omitted as much as possible the use of strengthening screens. This is not the moment to analyze in detail their advantage or inconvenience. I will refer, however, to one amongst its inconveniences which, I think, is pertinent at this moment, viz., the turbid and disseminated nature of the image. When, therefore, we treat of images that require great detail, obtained in subjects capable of enduring the exposure—a very short time—that is required to-day to obtain a radiograph, we refer to work without strengthening screen in order to obtain a completely clean image, with richness of detail, especially in pleurisies and patients with but small caverns.

Another interesting subject in radiographical technique, that also gives clearness to the image, and richness of details, is the distance that should exist between the tube and the plate. Without discussing the theory, but confining ourselves to the collected facts, we have succeded in fixing this distance at 50 centimeters from the thorax, at which we obtain the maximum richness of detail.

The last matter that will occupy us in this address, refers to the development of radiographic plates. We have tried nearly all modern and antique developers, from the iron clessic and pyrogallic acid to diamido-phenol and diamido-resorcine, and from this study we have deduced the necessity of never developing in radiography with old liquids in any one proportion, as much with the developing as with the fixing agents; we use the diamido-phenol to 1.2 per 100, with sulphite of soda crystallized to 6 per 100 as a developer, and Enckel's (Swiss) hypo-sulphite to 25 per 100. With these products we make our baths instantly, that is for two or three radiographs only, especially in Madrid, where the purity of the Lazoya's water (4" hydrotrimetrics) permits of its employment in all photographic laboratories.

We finish, as we began, confident of having defined nothing either good or new: but the call of duty has bade us to contribute our feeble forces to this concourse in which every altruism has its place in the fight with this dreadful tuberculosis.

Abstracts of Therapeutic Literature.

THE NEWER MATERIA MEDICA.

The Treatment of Tuberculosis with Glandulen.—Dr. Hoffmann, of Meerane, Saxony, starting from the conclusion that the human system is capable under normal conditions of rendering harmless, by means of the active substances of the bronchial glands, such bacilli as have entered the system, and that disease occurs only when the bacilli are too numerous, or when their invasion is so protracted that these active substances no longer suffice; further, that the system would be assisted in its natural attempt to keep healthy by artificially providing it with this same substance. He remarks that the bronchial glands of freshly killed sheep are removed under scientific supervision and strictly antiseptic methods. They are cleaned and then washed in alcohol; by way of preventing further rancidity, they are then freed from fat, and cut up in such a way as to prevent any loss. After drying in vacuo at a low temperature they are powdered, and sufficient sugar of milk is then added, so that when compressed into tablets, each tablet of 0.25 gram represents 0.25 gram of the fresh glandular substance. By working large quantities the homogeneous composition of the preparation is guaranteed. The dosage adopted is as follows: Three times daily, 1 tablet, this dose being increased every third day by three tablets until a dosage is reached of 5 tablets taken three times a day. It is claimed that this new preparation prevents night sweats, lessens cough and expectoration, increases the excretion of uric acid and causes the disappearance of bacilli in the sputum. A distinctly favorable result has been obtained in tuberculosis and scrofulous glands and trials have been made in surgical tuberculosis or lupus. This is another remedy which the profession will be called upon to test in the near future, and like so many similar preparations with the same object in view and guarded to the very consecutive judgment as to its value, should be held.

PHARMACOLOGY.

The Indications for Apomorphia.—Pugh (*Texas Medical Journal*, September, 1901,) recommends the use of apomorphia in cases of asphyxia to stimulate respiration, and would give it hypodermically in the arm or over the stomach in 10 gr. doses every ten minutes. He reports a case in which he aroused a man in this way who had been reported dead by two physicians after suffocation from coal gas. He advises its use in cases of drowning and lightning stroke and opium poisoning, though its effect as an emetic if given early would be self-evident in this last case. We have in it also one of the valuable remedies in retarded labor, due to rigid os, and in cases of strangulated hernia, in which it produces relaxation; this alone with gravitation often relieves the condition. He says he has treated a number of strangulated cases in this way and always with success.

Experience With Chloretone.—William Rush Dunton (*American Journal of Insanity*, July, 1901) reports a series of nine cases treated at the Sheppard Hospital, Towson, Md., in which chloretone was used in all with unfavorable results. He began to use the drug in June last in three-grain tablets, giving at first two and occasionally running the number up to five. On one or two occasions the dose was repeated. In all 20 patients were given chloretone. Eleven of these received several doses, but its power as a hypnotic being apparently weak in their cases, resort was made to other drugs, such as chloral, hydrobromate of hyoscine, etc., which produced better results. The other nine patients were given chloretone over quite long periods of time and it was in them that the bad effects were generally observed. One, however, took it for a long time without giving evidence of any bad symptoms which could be directly attributed to the drug. In the other eight patients, so serious a condition was noted at times that the use of chloretone has been discarded entirely in this institution. The well known effect of the chlorine compounds in causing fat degeneration should also be borne in mind. The author recommends that a great deal of caution should be exercised before this drug is put into use.

Value of Colchicin in Gout.—Recording his personal experiences K. Küster (*Dermatologisches Centralblatt*, September 7, 1901) says: Since restricting himself to a more vegetable diet and absolutely avoiding meat, he has found that he suffers less with gout, to which he is naturally and hereditarily predisposed. An occasional attack still occurs, and he finds relief in colchicin alone. He takes it in pills, 5 cg. colchicin to 1.5 gm. each of licorice extract and powder, to make 20 pills. Two of these will frequently abort a mild attack, and four pills in the course of two days reduce the symptoms very materially and shorten the course of the attack. He remains in bed but a short time, he is able to attend to his practice, and is quite recovered in eight to ten days, with all gouty deposits absorbed. Before using the colchicin, he was obliged to recline for two weeks and was stiff and aching for three weeks longer. His personal experience has been confirmed by that of gouty patients for whom he has prescribed the colchicin, which he accordingly recommends highly.

Counter Prescribing.—Donaldson (*Jour. Amer. Med. Ass'n*, September 14, 1901, p. 711) finds the druggist is better equipped (?) to do counter prescribing than ever before. He has on his shelf proprietary remedies that save him the trouble not only of compounding, but also of selecting. The patient makes the diagnosis and the druggist has the remedy mixed, labeled and guaranteed. He took the trouble recently to make a list from a druggist's shelves of the diseases treated by modern counter prescribing. He found there 18 sure cures for consumption, 22 for rheumatism, 12 for gonorrhea, and special remedies for other diseases such as diabetes, etc., together with numerous shot-gun mixtures, called pain-killers, blood-purifiers, or system-renovators that cure all diseases. He says it would not do to say to our patients "do not use patent medicines" for they would think it selfish in those advising them. The only legislation man can conceive that would mend matters would be one to require manufacturers to put the ingredients on each package. The physician should avoid prescribing proprietary remedies in the original packages as it teaches patients to treat themselves and gives them the little knowledge that is often dangerous. There is no need of telling the patient what drugs he is taking. If you listen in a drug-store to the people you can hear them ask for quinin, morphin, ergot, calomel, bromid of potash and dozens of remedies of which they have obtained knowledge through the physician. Poisonous or dangerous remedies should be ordered off the market. Among these he mentions a "female regulator" that is put on the market, which is an ideal abortifacient so far as drugs are capable of acting in that way.

Blood Examinations After Ichthyol Baths.—Karl Schutz (*Deutsche Medicinal Zeitung*) found that ichthyol baths increased the erythrocytes as well as the hemoglobin. The investigations of the leukocytes are not yet sufficiently accurate to warrant conclusions worthy of mention in the decrease of sugar in the urine which takes place, and the increase of hemoglobin until polycythemia results.

DISEASES OF THE NERVOUS SYSTEM.

Toxic Origin of Multiple Neuritis.—At a meeting of the New York Academy of Medicine held on the 7th of November, 1901, Dr. M. Allen Starr read a paper on the causation of multiple neuritis. He considered the toxic causes from poisons outside of the body. Cases are on record in which neuritis had developed following the use of toilet powders containing arsenic. Many persons who attempt suicide by taking arsenic, subsequently suffer from toxic neuritis. The inhalation of arsenic from wall paper gives rise to symptoms of poisoning. He mentioned the epidemic of arsenical neuritis, now so well known and recently observed in England, in which an inquiry showed that the arsenic had been introduced into the system in beer. This arsenic had gotten into the beer on account of the glucose which had been used. The glucose had been made from sulphuric acid obtained from arsenical pyrites. Arsenic is commonly found in copper, and workers in copper are apt to become poisoned with it. In factories in which the copper is heated to drive off the contaminating arsenic, the

fumes are conducted into chimneys 250 feet high, yet the atmosphere in the neighborhood is so poisoned by the arsenic that the workmen often suffer from arsenical neuritis. Lead is also a frequent cause of neuritis. The physicians practicing in districts where pottery is made should be on their guard to detect such cases. The lead is sometimes dissolved out of the glaze of earthenware, and will then poison the food. The writer stated that it was not unlikely that many of the nervous symptoms of those working in match factories are the results of poisoning with phosphorus. Dr. Starr had never seen mercurial neuritis arise from the medicinal use of mercury, but it was very common. In making silk hats, nitrate of mercury is used in England for producing the gloss on these hats and those engaged in this work are liable to suffer from mercurial neuritis. The speaker discussed the cause of multiple neuritis which was caused by non metallic substances. They form a much larger group than the latter. Among these may be mentioned alcohol in which the present idiosyncrasy seems to have much to do with the developing of neuritis, rather than the amount of alcohol the individual consumes. All workers in the factories where the fumes of alcohol are inhaled are liable to develop neuritis. It is more commonly seen among the higher classes than among the lower and more phlegmatic class of people. Coal gas, when inhaled, may cause a very severe form of multiple neuritis, but Dr. Starr states that it was not generally known that natural gas may produce the same effect. He mentioned the fact that neuritis had increased in Pittsburg since natural gas had become a fuel. Multiple neuritis was sometimes observed among those who work in rubber factories, and results from the inhalation of the fume of bisulphide of carbon. It has been stated recently that such coal-tar products as antipyrin, acetanilid, sulphonal, trional, and chloretone might give rise to neuritis. He has seen but one case of the sort in which neuritis had developed in a person who had taken an overdose of sulphonal. Dr. Starr also discussed neuritis due to toxemia in which he included all cases due to the development in the system of some bacterial poison, either external or internal. In those cases in which neuritis occurred as a sequel of diphtheria, severe pharyngitis, la grippe, typhoid and typhus fever, scarlet fever, measles, etc., he includes beriberi and leprous neuritis.

Treatment of Vertigo.—R. Spira (*Wiener klin. Rundschau*, August 25, 1901) states that concussion is liable to separate the terminal fibrils of the neurons innervating the labyrinth, and thus lead to disturbances in hearing and in equilibrium. With repetition of the external excitation the vestibular nerve becomes deadened and less sensitive, and the clinical disturbances in equilibrium become proportionately less and less pronounced. Spira advises, as a means of treating vertigo, the systematic repetition of the external stimulation. This is done by gymnastic exercises daily performed, such as swinging the head up and down, to and fro and from side to side, and turning in circles around a chair or table, proceeding very slowly and deliberately; this will prevent the tendency to symptoms akin to seasickness which many persons experience when they ride backward, swing or waltz. Spira says that it has proved useful in cases of vertigo following upon concussion of the labyrinth.

MALARIA.

Delirium and Associated Mental States in Malaria.—Jean P. Cardamatis (*Progrès Medical*, September 28, 1901) states that just as in the pathology of the nervous system, the toxins play the most important rôle, so it is not the malarial parasite, but the toxins which it secretes, which constitute the pathogenic cause of the various nervous phenomena observed in malaria. The delirium of malaria does not differ from toxic delirium. The intoxication of malaria may be pathological or psychological; there are four degrees; (*a*) excitation; (*b*) anesthesia; (*c*) coma; (*d*) paralysis. There are three degrees of malarial delirium: Subacute, acute, and very acute. The author states that psychic troubles are rare in the course of chronic malaria.

Benefit of Intrasplenic Injections in Chronic Malaria.—J. L. Castro Gutierrez (*Cronica Medico Mexicana*, May 15, 1901, quoted in *Jour. Amer. Med. Ass'n*) relates several cases of chronic malaria with hypertrophied spleen, absolutely rebellious to quinin or any medicinal treatment. He injected indirectly into the spleen a Pravaz syringeful of a mixture of 20 cg. of malate of iron and six drops Fowler's solution, in water. The evening of the same day an acute malarial attack occurred, with fever at 40 C. Subcutaneous injections of quinin were made repeatedly. The third day the intrasplenic injection was repeated, but was not followed by any reaction, and the patient's further recovery was rapid. This experience was repeated in every case. The malarial parasites had probably ensconced themselves in the spleen, and quinin did not reach them. The intrasplenic injection roused them up and forced them into the general circulation where the quinin administered immediately afterward soon destroyed them. The author asserts, therefore, that the technique should be first the intrasplenic injection and then large subcutaneous doses of quinin as soon as the acute attack appears.

INFECTIOUS DISEASES.

M. W. Richardson (*Journal of Medical Research*, July, 1901), presents a study upon **bacteriolysis and typhoid immunity.** His observations have been in progress during the past 9 months in the wards and pathological laboratory of the Massachusetts General Hospital, and have had as their primary object a study of the methods employed by nature in the cure of the disease. The object has been in case any well-defined principles were discovered in nature's methods, to apply those principles to the cure of the disease in general, and especially to the cure of those cases in which nature herself is insufficient to the task. Typhoid fever is a self-limited disease, and experience has shown that, except in certain organs of the body such as the urinary and gall bladders, the specific organisms of the disease are destroyed as convalescence approaches. Under these circumstances the natural supposition would be that, with the beginning of convalescence, the tissue cells and blood become more and more antagonistic to the growth of the bacilli, and finally cause their destruction. Such results have not been obtained by making examinations of the body fluids, such as the blood, outside of the body and the latter have failed to give any such result, at least in the great majority of instances. That is to say, if we take the fresh blood-serum from typhoid fever patients at any stage of the disease or convalescence, and combine it with an equal quantity of a bouillon culture of the typhoid bacillus, we get, in a vast majority of cases, not destruction, but abundant multiplication of the typhoid organisms. There are exceptions to this rule, but they are rare. This lack of power in typhoid serum is only apparent, for if we introduce the mixture of serum and bacilli into the peritoneal cavity of a normal guinea-pig, we find that there is not only a complete absence of multiplication of the bacilli, but there is absolute destruction and disappearance of the organisms. This series of changes undergone by the bacilli under these conditions was studied first by Pfeiffer, of Berlin, and has received the name of **"Pfeiffer's phenomenon."** More recently the study of the bactericidal sera of typhoid, cholera, and allied diseases, as opposed to antitoxic sera of diphtheria and tetanus has received great impetus through the investigations of Bordet, of France, and of Ehrlich, in Germany, upon the so-called hemolytic sera. Then follows a description of Ehrlich's theory of immunity. These researches have to do with the following phenomena: If the r. b. c of one species of animal, such as the guinea-pig, are injected into other animals, such as the rabbit, the blood serum of the rabbit acquires a marked power of dissolving the blood cells of the guinea-pig. Now this hemolytic power of the rabbit's serum under these conditions has been found to be subject to laws quite similar to those governing the destruction of the typhoid bacilli in Pfeiffer's phenomenan; that is, there is necessary to the solution of the red cells a specific immune body limited in action to the red corpuscles of the guinea-pig, and. in addition, a normal, non-specific body known now as the complement or addiment. This complement is in nature a ferment, and is found in varying amounts in all fresh normal sera. It is supposed to be identical with the so-called alexines, or those substances in the blood which have to do with the defence

of the body under normal conditions. It is destroyed by heating at 60° C. for half an hour, whereas the immune body is not. In the destruction of the bacilli or red cells both these elements are necessary, and it seems to be the function of the immune or intermediate body to bind the complement or ferment to the special cell. These substances in combination, harmless in themselves, cause a marked and rapid destruction of the typhoid bacillus. Is not this destruction due to a combination of similar substances within the human body? To determine this point the writer has investigated the blood serum of forty-one typhoid patients at different stages of the disease, alone, in combination with various normal sera, and finally with the serum of persons suffering from disease other than typhoid fever. This series of observations, though obviously incomplete, seem to show a distinct parallel between the course of the disease in typhoid fever and the bactericidal power of the blood. This parallel does not hold for all stages of the disease, for in convalescence, although the individual is without doubt immune, his blood may alone show but little power. It seems, therefore, that these protective substances in the blood represent simply an excess thrown off by the tissue cells, and that there may be a strong cellular immunity though the blood be apparently weak. On the other hand, a strongly protective blood serum probably indicates a proportionately strong cellular immunity. We see, therefore, that we must modify the statement made at the beginning of the paper, that "typhoid serum at no stage of the disease shows power markedly antagonistic to the growth of the typhoid bacillus." As ordinarily applied the serum has but little power. We have seen from these experiments that in the later stages of the disease, that is, in the typical fourth week—the blood acquires a very marked destructive power upon the typhoid bacilli. This is the time at which the disease cures itself. In the middle of the disease, when a specific therapy is most to be desired, we have seen that the blood has little power alone, apparently from the lack of the normal element. At any rate, if we add to it the normal element we get a destructive serum such as is seen in the concluding stages of the disease. It is, therefore, probable that the immune element may be present in large amount at the middle of the disease, and yet be of little or no use. We can, therefore, hazard a guess why serum-therapy in typhoid fever and allied diseases has made so little progress. We have been giving a serum loaded with the immune element with which the patient was perhaps already surfeited, and we have neglected to give the element which was necessary to make active agencies already present in the patient's blood. Apparently, we should give to our typhoid patients normal serum. Here we are met with what seems to be, at first, a serious obstacle, for we have seen that if we combine the two kinds of serum, the combination is inert. In the human body, however, the conditions are different, for here we have the bacillus already under the influence of the immune serum. A bacillus with the immune body attached is able, in certain cases at least, to break up this combination and to bring its constituents again into action. The following conclusions can be made, or at least suggested: (1) In typhoid fever nature produces a cure through bactericidal agents acting upon the specific bacilli. These agents are produced by body cells, especially those of the lymphatic apparatus, and are found in varying amounts in the blood. (2) These protective agents are at least two in number, a specific immune element and a non-specific normal element or ferment. (3) It is the function of the immune element to bind the complement to the bacterial cell, which is then destroyed. (4) In the early and middle stages of the disease the immune body may apparently be present in large amount, and yet be of little value because of the absence of the complement. (5) In the stage of convalescense or falling temperature the normal element returns apparently to the blood, and a corresponding destruction of the bacilli takes place. Further, inasmuch as this marked destruction of the bacilli must set free an excess of typhoid toxin contained in the bacterial cells, we have in this fact a possible explanation of the marked remissions of temperature seen clinically in the fourth week of the disease. (6) Inasmuch as the addition of normal serum to the inactive serum of the sick typhoid patient will, in most instances, make that serum more powerful, in fact, make it very similar to the serum found in the fourth week, we should be justified, theoretically, in treating such patients with normal serum. (7) It will probably be found, however, that in certain cases the blood of the patient will lack both immune and normal elements, both of which will have to be supplied. Just what elements will be necessary can be determined probably by submitting the patient's blood to tests similar to those just described. (8) The blood of a normal individual may, under conditions described above, have very marked destructive power upon typhoid bacilli. This power is due, undoubtedly, to substances very similar to those found in typhoid serum. Their relation to the subject of natural imunity is, of course, of the greatest importance, and needs much further study. (9) The principles set forth above may apply to infections other than typhoid. This question should be investigated.—(On account of the importance of this contribution we have abstracted it at length. The careful, painstaking work by Dr. Richardson deserves wide recognition. —Ed.)

The Changes Effected by Anti-Typhoid Inoculation in the Bactericidal Power of the Blood.—Wright (*Lancet*, September 14, 1901) presents an article **on the changes effected by anti-typhoid inoculation in the bactericidal power of the blood; with remarks on the probable significance of these changes."** Three previous communications have been published in the *Lancet*; one on December 1, 1900, the second on March 2, 1901, and the third on June 1, 1901. In these previous articles, he outlines the methods (a) for determining the desired dilution of a bacterial culture; (b) methods for mixing volumes of serum with corresponding volumes of successive dilutions of bacterial cultures in a series of capillary tubes; (c) the technique for testing the bactericidal effect upon these dilutions produced by serum, and finally he gives methods for enumerating the living bacteria contained in the culture. In the present communication the author has carried on a series of investigations upon individuals, and these were in each case made upon surgeons-on-probation in attendance on the Army Medical School, Netley. The anti-typhoid inoculations, which consisted of sterilized culture, were in all instances begun with very small doses. Only from one-third to one-half of the dose required in the case of a soldier was used. Almost invariably the primary inoculations were followed by the local and constitutional disturbances so commonly seen after anti-typhoid inoculation. The determinations of the bactericidal power of the blood were made before and subsequent to anti-typhoid inoculation. The results of these observations are set forth in three tables. In the first table, the results of the experiments relate to fourteen surgeons-on-probation who had never suffered from enteric fever. These individuals were inoculated with fresh typhoid vaccine. The second table includes the data of the experiments made on two surgeons-on-probation who recently convalesced from enteric fever. These persons were also inoculated with fresh anti-typhoid vaccine. The third table represents the results of observations made on four surgeons-on-probation who had not suffered from typhoid fever, and who were inoculated with typhoid vaccine prepared respectively 18 and 24 months previous to the time of experimentation. Definite evidence of bactericidal effect upon the bacillus typhosus by the blood of the individuals was obtained in 13 out of 14 normal persons, in one out of two convalescents of typhoid, and in two out of four normal persons inoculated with the old vaccine. The positive phase of increased bactericidal power of the blood manifested itself within an extraordinarily short period. A considerable number of days were required for a full development of the bactericidal power. A summary of these observations is deduced, which we give in substance: "With regard to the sequence of events after an anti-typhoid inoculation it has been shown: (1) that where the quantum of anti-typhoid vaccine employed produces the familiar well-marked constitutional symptoms, a decrease in the bactericidal power of the blood and a correspondingly increased susceptibility to typhoid infection may supervene in the period immediately subsequent to inoculation. Upon this negative phase of increased susceptibility there may, however, be expected to succeed, probably within a period of three weeks or less, a phase of increased bactericidal power and a greater re-

sistance to typhoid; (2) that when the quantum of anti-typhoid vaccine employed produces very severe constitutional symptoms, a negative phase of increased susceptibility will be produced, which—and the same would appear to hold true also in the case of a negative phase supervening upon an actual attack of typhoid fever—may be followed up by a positive phase of increased resistance; (3) that when the quantum of anti-typhoid vaccine employed is reduced to the point at which marked constitutional disturbance is avoided, a positive phase of increased resistance may be expected to supervene without the intervention of any negative phase, and in many cases within 24 hours. Some practical conclusions are also drawn. In these he emphasizes the value of anti-typhoid inoculation, and the importance of using very small doses in the presence of an epidemic, so as to avoid marked constitutional disturbance. In the absence of an epidemic of enteric fever, larger doses may be employed.

Subarachnoid Antitoxin Treatment of Tetanus.—E. v. Leyden (*Therapie der Gegenwart*, August, 1901) states it has been established that tetanus antitoxin will neutralize the tetanus toxin in the blood, but the persistence of the convulsions, after this has occurred, indicates that they are due to the localization of the toxin on the large motor ganglion cells of the anterior horns. An emulsion of these cells from a patient who had died in spite of the subcutaneous injection of antitoxin, induced experimental tetanus while tests with the blood were negative. Injecting the antitoxin directly into the brain has saved only 6 out of the 24 thus treated to date, according to the records. Kocher has obtained slightly better results by slowly instilling it after trephining, introducing the canula for 4 or 5 cm. Jacob and Sicard first tried subarachnoid injection, or dural infusion, as they call it, after finding it very successful in tests on dogs, although it always failed on goats. This method has been tried eleven times on man. Six patients could not be saved, but the last five—although very severe cases—have all recovered, including a new case described by Leyden in this communication. The patient wos a young hostler with temperature of 105.8° F. Duration of incubation not known, but symptoms of tetanus for three days. The temperature dropped to 101° F. in an hour after 10 c.c. of cerebrospinal fluid had been withdrawn and 5 c.c. of Behring's tetanus antitoxin infused in its place. The improvement was marked the next day, but the day after, the muscular rigidity becoming more pronounced, the infusion was repeated under the same conditions. By the end of the month the patient was completely restored except for persisting rigidity of the abdominal muscles which gradually subsided. The amount of antitoxin injected was equivalent to .5 gm. of the solid form. In Leyden's first case, two years ago, a young woman with tetanus of ten deys' incubation, after a three months' abortion, recovered after dural infusion of the equivalent of 2.5 gm. of solid antitoxin. The technique is the same as for lumbar puncture, but the patient must be kept under the influence of narcotics, and the food must be supervised as the patients are liable to choke. Pfaundler has recently reported three cases of tetanus neonatorum treated in this way at Escherich's clinic, in which the beneficial influence of the dural infusion of antitoxin was unmistakable. McCaw has also published a recovery from tetanus neonatorum, with temperature of over 106° F., after subcutaneous injection of 5 c.c. of antitetanus serum from the Institut Pasteur. Pure cultures of the tetanus bacillus were derived from the navel secretions. Half the amount was injected again the third day, six days after the first symptoms had appeared. —(This abstract is quoted from the *Journal of the A. M. A.*)

Treatment of Tetanus with Antitoxic Serum.—Louis C. Ager (*Medical Record*, Oct. 12, 1901) reports a fatal case of tetanus treated with antitoxin. The symptoms first appeared five days after a severe injury, causing the laceration of the left thigh, by striking an old piece of sewer pipe. 80 c.c. of tetanus antitoxin were administered subcutaneously on the sixth or seventh day. In addition the chloral and bromide treatment was carried out. The patient died at the close of seventh day after the accident, three days after the first symptoms of tetanus, although the tetanus symptoms were at no time very sevére.

Serum Treatment of Erysipelas.—V. Jez (*Wiener med. Wochenschrift*, August 31, 1901, employs serum which is derived from the same patient on whom it is used. It always induces a reaction, evidenced by a rise of temperature after one or two hours, and rapid improvement of all the symptoms. The number of leukocytes in the blood increases while the toxic substances are eliminated in the urine, as shown by its increased toxicity. No after-effects were noted in the ten cases in which Jez tried this serum treatment. If 5 to 10 gm. are not enough to induce the reaction, he increases the amount. The serum is taken from a blister artificially produced for the purpose.

DISEASES OF THE LUNGS.

The Employment of Artificial Respiration in Bronchitis of Children.—Heerman (*La semaine med.*, 1901, 35) has employed this procedure in all cases of bronchitis and broncho-pneumonia in children, even if there was no asphyxia threatened. Artificial respiration was performed for one half hour daily. At the moment of expiration slight pressure was made over the summit of the false ribs. The children became accustomed to the manipulations, which seemed to ease them, the influence being exerted not only upon the expirations, but also upon the inspirations. Inhalations of oxygen may be used to assist the heart. The author states that Treuthardt combines massage of the whole body with the artificial respiration.

Symptomatic Treatment of Cough.—M. Sänger (*Therapeutische Monatshefte*, July, 1901, quoted in *Jour. Amer. Med. Ass'n*) states that one of the best measures for relieving a cough is the inhalation of the vapors of menthol. Sänger says that an inexpensive and very effective method of inhaling is to warm a few crystals in a spoon over a candle for five to twenty seconds and then inhale the fumes, repeating as often as necessary. A simpler way, perhaps, is to pour ten to twenty drops of a 50 per cent. alcoholic solution of menthol on the palms and then hold them, like a mask, over the face. In case of excessive mucous secretions in the throat he recommends injecting 1 to 2 gm. of a 10 to 20 per cent. solution of menthol in olive oil, directly into the throat. Violent coughing is induced which expels all the accumulations of mucus, and enough of the menthol is retained to accomplish the purpose of an inhalation. This measure in chronic bronchitis or phthisis will arrest the cough for one to five hours after the first paroxysm is past, or even longer, if supplemented by inhaling as above described. It has a cumulative action and the intervals should gradually be lengthened. These injections have proved extremely effective in whooping cough. Hemorrhage is a contra-indication. (A writer in the *Bulletin Medicale* has recently suggested that the simplest method of inhaling menthol is to chew a crystal and then breathe through the mouth).

A Case of Acute Double Pneumonia Treated with Oxygen; Recovery.—G. E. Richmond (*The Lancet*, September 28, 1901) reports a case of pneumonia in a man of twenty-three, who was of a general robust constitution, and did not appear to have the severe type of toxemia often seen in this disease. Against recovery were the facts that (1) the pneumonia was double; (2) the disease progressed pari passu on both sides until the upper lobes alone were left intact; and (3) the patient fell into a typhoidal state, without delirium, but with respirations of 80 per minute, and a pulse varying from 120 to 136, and after the slightest exertion the respiratory rate was anything from 80 to 120 per minute. If this condition had lasted a day or two longer than it did, the patient must have died from a lack of respiratory capacity, or if the upper lobes on each side had been attacked, the subsequent dyspnea must have killed him very shortly. From the time the oxygen was given the temperature began to fall, while before that it had been rising, the highest temperature (104.6°) being reached just before the first inhalation.

On the Treatment of Cirrhosis of the Liver.—Musser (*Journal of the American Medical Association*, Oct 5, 1901) outlines the treatment of cirrhosis of the liver when dealing with portal obstruction, ascites and biliary obstruction. In dealing with the first condition (portal obstruction) he does not deem it necessary to outline the treatment for its re-

lief to practical and scientific men. He believes calomel is of great value in the treatment of ascites. Another drug which has proved serviceable in reducing ascites is apocynum cannabinum, in doses of fifteen, twenty or thirty drops, four times daily. When medication is without avail, tapping should be resorted to early. Musser has seen ascites cured after the hundred and fiftieth taping. He calls attention to the necessity of surgical relief in cases of obstruction of the biliary passages with cholangitis and cholecystitis.

A Contribution to the Therapy of Pertussis.—T. Zangger (*Korrespondenzblatt für Schweizer Aerzte*, June 15, 1901, No. 12) believes that the treatment of whooping cough with quinine, combined with hydrotherapeutic measures, is the simplest way of antagonizing the disease. He advises the administration of five to ten drops of a 1 to 2% solution of hydrochlorate of quinine in milk three times daily before meals. As a hydrotherapeutic measure he advises the cold pack with friction, the temperature being modified as required in children and those who do not react well to cold. The author states that he has obtained no positive results with this remedy as a prophylactic measure.

MALIGNANT GROWTHS.

On the Causation and Serum Treatment of Malignant Growths.—Vlaieff (*Vratch*, June 30, 1901) working at the Pasteur Institute, found that blastomycetes (saccharomyces hominis) play an important role in the causation of malignant growths. They are found in malignant tumors of man and animals, can be isolated and cultivated in pure culture and reproduce the disease (cancer, sarcoma, adenoma, etc.) in dogs, rats and rabbits. The toxins of these blastomycetes, when injected into animals, cause fatty degeneration of the liver, kidneys and heart. By repeated injections of gradually increased doses immunity may be produced, and the serum of immunized animals is capable of curing cancer in the incipient stages, or prolonging the life of the patient when the growth is far advanced. The author employed the serum obtained from immunized geese and donkeys in the treatment of malignant growths in 60 cases and obtained results which seem to establish the curative value of the serum. He is of the opinion that syphilis, rheumatism, decayed teeth, chronic gastro-intestinal catarrh, traumatism, alcoholism, cirrhosis of the liver, malnutrition and anti-hygienic conditions are predisposing factors in the causation of malignant growths.

Failure of the Knife in the Treatment of Cancer.—Robert Reyburn (*Medical Record*, October 19, 1901) discusses the failure of the knife in the treatment of cancer. After prolonged study of the subject, this writer has come to the conclusion that when an incision is made into any part of the body for the removal of a malignant growth, we at once divide and lay open for infection every vein and lymphatic vessel in the part operated upon. No matter what we may believe to be the contagium of cancer, the fact remains the same. Reyburn believes that the operative measures may be substituted by the electric cautery, or, in a limited number of cases, the use of arsenic or chloride of zinc for the removal of morbid growths. He concludes that the results of Dr. John Bryne in the treatment of uterine cancer show that the treatment of this affection by the electric cautery will accomplish the best results.

SURGERY.

Radical Treatment of Varicocele by Resecting the Veins in the Inguinal Canal.—Chenisse (*Semaine med.*, February, 1900) discusses the procedure mentioned in the title as first performed by Narath, and which consists of resecting the main branch of the spermatic vein in the inguinal canal. A 10 cm. incision is made above Poupart's ligament in the direction of the inguinal canal. The incision should not extend further below than the spine of the pubis, and should only be made through skin and superficial fascia. Next, the aponeurosis of the oblique is divided, the dilated veins exposed, isolated, freed as much as possible above, and finally divided after double ligation; the central stump then disappears in the abdominal cavity. The operation has been successful in nineteen cases reported by Narath.

Internal Urethrotomy in the Treatment of Strictures.—Alfred Hock (*Prag. med. Wochenschr.*, 1901, No. 13) believes that the fear of performing an internal urethrotomy is not justifiable. The grave cases, hemorrhages, infiltration of urine, and the like, occur but rarely. Operations are now as a rule performed with the urethrotome of Maisonneuve. The author advises the following simplified technique: The introduction of a bougie, then a metal sound, incision at the upper wall of the urethra with a triangular probe-pointed knife, then a small incision, and the introduction of a not too large catheter; antiseptic precaution should be observed throughout the operation. Out of 67 cases observed by the author 64 after five years retained a dilated urethra. Internal urethrotomy is indicated as follows: 1. In all cases in which a rapid dilatation of a constricted urethra is required, like in cases of retention cystitis, calculi, etc.; (2) when an irritable stricture indicates rapid treatment; (3) in the so-called resillient strictures, or such as can only be dilated up to a certain point; (4) in very callous strictures. The operation is contraindicated where dilatation is effective and where a bougie cannot be introduced.

DISEASES OF WOMEN.

Intro-Uterine Infection Treated by Intra-Irrigation.—Fitzgerald (*Medical Mirror*, August, 1901,) recommend the use of free intra-uterine irrigations in cases of infection in preference to the curette. He has been making use of the irrigation in all septic and toxic-genetic troubles, but especially in puerperal conditions in which he thinks its benefit has been most apparent. He suggests that the irrigation be carried well up to the fundus, flushing of the uterine cavity with carbolized water by reflux irrigator with a fall of two feet, then while it is still in the uterus, the douche is detached and, by means of a short tube, a small glass funnel is attached which should be held about fourteen inches above the end of the irrigator, and a little peroxid of hydrogen introduced at a time, giving time for action of each addition. He thinks it advisable to repeat this operation after several hours and has found this method very satisfactory in cases of uterine infection. The curette should be used frequently and more reliance placed upon the stimulating, unirritating, intra-uterine douche and free drainage, preceded always by thorough removal of all infected matter that can be taken away without injury to the normal structure, with subsequent irrigation, repeated as indicated.

DISEASES OF THE EYE.

Cataract Operations in the Aged.—E. Mendel (*Berliner klinische Wochenschrift*, August 12, 1901, No. 32) states that, in spite of the fact that reclination of the lens in the very aged at one time was largely employed, and is still to some extent, the author concludes from his observations at Hirschberg's clinic, that extraction is after all the most feasible procedure, even very late in life. His observations embrace 1,645 cases of nuclear cataract, among which there were 36 patients over 80 years of age. Only in two cases were the results not entirely satisfactory. Advanced age does not therefore offer an unfavorable prognosis for cataract extraction. In very restless patients general anesthesia may be employed. Delirium will occasionally occur, but the most serious complications are those related to the heart, lungs and bladder. In one case heart disease gave rise to pulmonary edema, which, however, was controlled by morphine.

TOXICOLOGY.

Poisoning with Carbon Bisulphide.—E. Mendel (*Berliner klinische Wochenschrift*, July 29, 1901, No. 30) gives his observations of carbon bisulphide poisoning which embrace the cases of two workmen who had been employed as vulcanizers. The following changes were noticed in consequence of the poisoning: degenerative atrophy of the interosseous muscles in both hands and feet, particularly in the thumbs and little fingers, and weakness in the arms and legs. Anatomically the author considers the clinical picture as a poliomyelitis, which is also substantiated by other authors. Out of nine workmen in the factory the ma-

jority were affected. Experimental investigation has shown that carbon bisulphide affects various portions of the nervous system, centrally as well as peripherally, and therefore the author believes that the lesion is not confined to one nerve area, but that it is considerably distributed.

Toxic Manifestations Following the Employment of Perfumed Glycerine.—Hünerfauth (*Deutsch Med. Woch.*, July 11, 1901, No. 28 reports a case of intoxication in which he employed an injection of 5 g. of glycerine into the rectum. Several hours thereafter there occurred palpation of the heart, dizziness, faintness, dyspnea and abundant urination. After a second injection several weeks later the same symptoms became manifest and the glycerine was consequently suspected. The cause of the poisoning by the glycerine was found to be the extract of lilly of the valley which was added to glycerine by the druggists. Although the case resolves itself into one of poisoning by convallaria majalis, it is reported to show the dangers from such adulteration.

GENITO-URINARY DISEASES.

Treatment of Epididymitis.—M. Poross (*Monatshefte f. prakt. Dermatologie*, July 1, 1901) states experiments on dogs have shown that the disturbances in the circulation in the epididymis are frequently of reflex origin. The organ, not the patient, requires rest. Hot applications should be scrupulously avoided as they increase the inflammation. Poross recommends injections of a weak solution of subacetate of lead, and the application of a Falkson suspensory after anointing the scrotum with vaselin.

The Curability of Syphilis.—Gottheil (*International Medical Magazine*, October, 1901) concludes as follows: 1. Syphilis is a curable disease, and may even, with restrictions, be called a self-limited one. 2. While the cure of a given case can never be affirmed with scientific accuracy, the chances of it being the fact after a certain time under proper treatment are so great that it may properly be claimed to have been effected. 3. Practically, a patient who has been properly treated through the active stages of this disease, and who has had no manifestations of it for several years thereafter, may be regarded as cured, and may be told so.

When May We Consider Gonorrhea as Cured?—Leonhard Leven (*Arch. f. Dermatologie u. Syphilis*, 1901, LV. S. 31) bases his opinion upon this subject according to whether epithelium or leukocytes, or both, are still present. He does not attach much importance to the presence of bacteria and believes that the gonococci cannot be characterized sufficiently either by Gram's method, their intracellular position, or by the relation of the epithelium, to enable one to state as to whether the condition is cured or not. He believes cultivation and the attempt to obtain pure cultures are as yet too tedious for practical purposes. The author furthermore believes that one ought not be satisfied with negative results, but that a secretion is only to be considered as free from gonococci when no more leukocytes are present. Exceptions are complications, like strictures and catarrh of the bladder.

TUBERCULOSIS.

Remarks on Tuberculosis and its Treatment.—Dr. Baradat (*Dublin Journal of Medical Science*, October, 1901) states that two factors must be taken into consideration in the treatment of tuberculosis, as of every other infectious disease. The first of these is the infectious agent; the second is the soil in which the agent has developed itself, and whose characteristics are either acquired or hereditary. All rational medication must apply to these two factors, and take into account all elements which arise in a given case. A review of the new methods of treatment employed in tuberculosis reveals the fact that, although these methods are, without doubt, of real value, they are efficacious only against given systems, and possess no influence over the whole phenomena which are to be overcome. Certainly they have several indications, but they are insufficient, because their field of action is limited. Baradat believes that a thoroughly rational treatment should act in two ways, both as a dynamogenetic agent and as a specific. The organism must be strengthened and nutrition favored. It is here that a use is found for medications tending to produce these effects, such as arsenic in its more easily assimilable forms (cacodylates), tannin, iodin, cod-liver oil, salt lotions, alcohol frictions, sea-baths and hygienic treatment. In his opinion, the hygienic treatment will best be realized by free sanatoria. He highly recommends cacodylate of sodium in cases of anemia, of ganglionic and lymphatic persons in whom he has observed a regular revival of the physiological functions, an increase of appetite, and an absorption of glands. He has obtained less favorable results in cases of ulcerous and cavity tuberculosis. Cacodylate, he believes, will be specially useful for the predisposed, and those of incipient cases which were so difficult to diagnose, and which we now are able to recognize. He uses the raw meat treatment to the amount of about 28 ounces a day. He believes that the method of antituberculous serotheraphy is the solution of the long-sought problem of the cure of tuberculosis. Naturally, with this medication, as with any other, we must not wait for the patient to be emaciated, to present digestive troubles and cachexia before treating him. For, he insists upon the point, that tuberculosis is not consumption. The consumptive or phthisical is one in whose case the bacillus, after having terminated its progressive career, has slowly brought on the suppurative destruction of the cells attacked, and in this mass of destroyed matter, you will find all the processes provoked by working together with the Koch bacillus. He believes that the use of natural serum fulfils the required conditions, for it is both dynamic and bactericidal.

CONSTITUTIONAL DISEASES.

Treatment of Osteomalacia by Castration.—S. Catellani (*Gazzetta Degli Ospedali*, October 6, 1901, quoted in the *Jour. A. M. A.*) reports two cases. One patient, a woman of 29, who was completely cured by the castration; the other was 39 years old, and the operation relieved her of all pain, but did not prevent a fatal termination seven months later. In the latter case a remarkable remission with symptoms had been observed in the course of the disease, coinciding with suspension of the menses for six months. When menstruation returned, the osteomalacia resumed its progressive course. The pains permanently disappeared on the first or second day after castration. The prolonged administration of phosphorus has cured certain patients and Morpurgo has succeeded in inducing in animals the production of localized alterations in the bones resembling those of human osteomalacia, by microbian lesions in the spine. These facts all tend to establish the close connection between the genital organs and nervous system and the osteomalacia processes.

DERMATOLOGY.

The Treatment of Leg Ulcers.—O. Schulze-Cottbus (*Münch. med. Wochenschr.*, 1901, No. 12) considers camphor an excellent remedy in the treatment of leg ulcers. He prescribes it in the form of a salve consisting of two parts of camphor, fifteen to twenty parts of zinc oxide and sufficient base to make a hundred parts, or when this cannot be well tolerated by the patient, he orders the camphor in solution as follows: Camphor 2 parts, olive oil 50 parts and zinc oxide 40 to 50 parts, the latter solution to be well shaken before using. Under this treatment, which is to be employed three times daily, it is claimed by the author that most leg ulcers heal.

The Treatment of Herpes Tonsurans.—Pignot (*Journ. d. pratic.*, 1901, No. 4) reports a treatment of herpes tonsurans which yields good results, and is conducted at the Saint Louis Hospital in Paris: In order to affect the parasites situated on the surface and at the same time shield the healthy portion from infection, the whole scalp is annointed every evening with eleum cadinum and every morning, after thorough cleansing, a 25-33% tincture of iodine is rubbed into the scalp. The real object of the treatment is

to produce perifollicular purulent inflammation, thus causing the diseased hair as well as the parasite to be eliminated. For this purpose croton oil in dilute form is painted upon the scalp, causing the formation of miliary pustules. While the pustules upon the smooth skin rapidly dry, those which form around the follicles develop a purulent folliculitis on account of secondary infection, thus producing the desired result. By repeated application of croton oil the parasites are gradually exterminated.

A Method for Healing Chronic Local Eczema.—Eduard Spiegler (*Archiv für Dermatologie und Syphilis*, 1900, Festschrift supplement) describes a method for treating chronic local eczema which is only applicable when the lesion is sharply circumscribed, chronic, and which shows absolutely no inflammation. The diseased area is first thoroughly washed with soap and water and then thoroughly washed again with a solution of caustic potash and water. This cuses some excoriation with an exudation of serum. The eczematous patch is then dried and painted with a 50% solution of silver nitrate. The scab which ensues is covered with cotton and a bandage. A cure takes place underneath the scab in from one to three weeks.

Compression as a Means of Treating Ichthyosis.—Hallopeau (*Annales de Dermatologie*, July, 1901), describes a severe case of congenital ichthyosis, in which it was observed that the skin under garters worn by the patient was perfectly healthy. This suggested the idea that compression might have some influence on the affection, and a bandage was applied to one arm as a test. In a few days all the concretions under the bandage had disappeared. This fact suggests a new line of treatment for ichthyosis, and seems to show that the interference with the processes of nutrition in ichthyosis is not as severe as generally regarded.

PEDIATRICS.

Anesthetics for Children.—Wynkoop (*Jour. Amer. Med. Ass'n*, October 19, 1901, p. 1068) reviews the opinions and facts as regards the action of anesthetics in children and comes to the general conclusion that ether can be used with greater safety than any other anesthetic, while the combination with nitrous oxid is of value. Either alone has few contraindications if properly adminstered.

The Influence of High Temperature upon the Casein of Milk.—H. Conradi (*Münchener med. Wochenschrift*, XLVIII, 5, 1901) states that when a solution of calcium chloride is added to milk and the solution then exposed to a temperature of about 50° C., coagulation occurs after a certain amount of calcium chloride has been added. The coagulum is soluble in dilute ammonium chloride, in ammonium oxalate, and in lime water; in the latter solution the addition of phosphoric acid causes a flaky precipitate. If, on the other hand, the milk which, upon the addition of a certain amount of calcium chloride would coagulate at 50° C., be cooked for half an hour, and then the calcium chloride added, the milk will coagulate at 40° C. If, on the other hand, the milk be heated to no more than 80° C. before the addition of the calcium chloride, the subsequent point of coagulation will not be decreased. Heating the milk, therefore, above 80°C. causes a change in the casein (paracasein); it is therefore advisable in killing the bacteria not to employ such high temperatures. Heating the milk for half an hour at 70° C. does not make the milk less palatable; but the palatability of the milk is changed even in 15 minutes at 75° C. Heating the milk above 80° C. therefore causes a permanent change.

CARDIAC DISEASE.

Observations on Heart Disease.—Edes (*Boston Medical and Surgical Journal*, September 26, 1901) remarks that the time is not long past when the prognosis was based upon the observation of cardiac murmurs almost exclusively, and the average practitioner is supposed still to be in bondage to the old ideas. He describes the physiologic action of the heart and shows that the line between the healthy acting and insufficiently active heart cannot be sharply drawn, but has a varying margin which can only be told with precision by experiment which may be dangerous. It is only in the increase of muscle power and in regulating it so that it can be economically used that the best results are to be obtained. He dwells on the importance of the trained touch to diagnose the pulse, and, while it is not possible to diagnosticate actual degeneration of the cardiac muscle, it can be done with sufficient probability for practical purposes. He considers the term "heart failure" a proper phase for the state of things when the margin has been passed in the wrong direction. It is objectionable only because it is so easy to misapply. In conclusion he describes the innervation of the heart and remarks how many points are yet undecided in the physiology, and pathology is still further behind.

Atropin in the Differentiation of Bradycardia.—A. Johannesen (*Wiener med. Blätter*, July 4 and 11, 1901) states that bradycardia may be caused by a direct or reflex irritation of the bulbar vagus center, or by some lesion of the automatic motor center of the heart in the myocardium. These primary causes can be readily differentiated by the subcutaneous injection of 1 mg. of atropin. If the bradycardia is of intracardial origin, it continues unaffected by the action of the atropin. If, however, it is due to irritation of the vagus center, it is arrested by the atropin, as the latter paralyzes the heart-retarding apparatus—the terminals of the vagus in the heart. He details several cases, with post-mortem discovery of sclerosis of a coronary artery in those cases in which bradycardia persisted uninfluenced by the atropin. In the case in which the bradycardia was arrested by the atropin and the pulse increased at once from 45 to 110, fresh thrombosis was found in the left middle cerebral artery with softening of the internal capsule, the optic thalamus, etc. The heart was intact.

Tuberculous Pericarditis with Large Effusion.—At a late meeting of the Medical Society of the Paris Hospitals, (*Bulletins et Memoires de la Societe Medicale des Hôpitaux de Paris*, 1901, No. 11), Dr. H. Rendu reported a case of tuberculous pericarditis in a man of 34. On admission to the hospital he was suffering from dyspnea; his pulse was small, rapid, and irregular, a typical "pulsus paradoxus." The precordia bulged, there were present edema of the anterior chest wall, precordial dulness, and tympany over the left lung posteriorly. Rendu punctured the pericardium, withdrawing 800 g. of sero-fibrinous, slightly hemorrhagic fluid. Four weeks later the effusion again caused the same symptoms. 1250 c.c. were withdrawn, and 1 g. of camphorated naphthol was injected. Six weeks later he was well. He has continued well since, considering his pulmonary condition. The size of the effusion, and the great quantity of mononuclear leukocytes in it showed that the condition was probably tuberculous. The sphygmographic tracings show characteristically the changes in the pulse.

DISEASES OF THE GASTRO-INTESTINAL TRACT.

The Influence of Sugar Upon the Gastric Secretion.—W. N. Glemm (*Therapeutische Monatshefte*, 1901, Hft. 8) states that the results of his observations show that grape sugar decreases the gastric secretion. The value of this observation was illustrated by his experiments on three dogs. Doses of 200g (20% dextrose) decreased the elimination of free HCl. Levulose affected the normal secretion only to one half the extent. He believes that the administration of sugar ought to have a permanent place in the therapy of hypersecretion and hyperacidity, with or after the administration of atropin, as the influence of the latter drug seems to be somewhat analogous in its action on the gastric secretion to that of sugar, especially as far as the periodicity of the outpour is concerned. The sugar, however, seems to be especially adapted to the chronic hyperacidity, and rather inapplicable to the acute variety, associated with pyloric spasm.

Atropin Treatment of Ileus.—Gebele (*Münchener Med. Wochenschrift*, August 13, 1901) says if an internal remedy is indicated in case of ileus, especially in ileus from paralysis, morphin is much to be preferred to atropin. In all other cases, surgical intervention is the only treatment. But in all cases of ileus benefit may be derived from lavage of the

stomach and injection of several liters of oil, with, possibly, 70 to 100 gm. olive oil internally, repeated several times a day. An exploratory laparotomy is much to be preferred to the administration of atropin which masks the symptoms and allows the favorable moment for intervention to pass, as in a fatal case reported.

A Case of Ileus Which Could Not be Treated Surgically, Cured by Atropine.—Hämig (*Münchener medicinische Wochenschrift*, June 4, 1901, No. 23) reports a case of ileus which appeared in a man 59 years of age after the extirpation of a right kidney for carcinomatous degeneration. After the injection of 0.003 of atropine, the patient was cured, although there were marked symptoms of poisoning from the drug. The theories advanced for the occurrence of the ileus in this case are that the retroperitoneal ganglia of the splanchnic nerves were irritated during the operation, or that possibly there occurred thrombosis of the mesenteric veins.

DIETETICS.

Influence of Food on Uremia.—A. Strubell (*Wiener Klinische Wochenschrift*, July 18, 1901), states that uremia induced experimentally in dogs fed on albuminoids and fat, or in starving dogs, proved fatal, on an average in fifty-three hours. Dogs fed on carbohydrates survived eighty-nine hours, or thirty-six hours longer than the others. Strubell states that there is no essential clinical difference between experimental uremia and uremia in man. He therefore concludes that in case of threatened uremia or in any acute or chronic nephritis, the food should be restricted to carbohydrates from time to time, or at least to a vegetable diet, once or twice during the year, for instance. The diet should be the reverse of that recommended in diabetes, allowing all that is forbidden in diabetes, and forbidding what is allowed, with the exception of alcohol.

DISEASES OF THE EAR, NOSE AND THROAT.

Cleft Palate and Its Relation to Speech.—G. Hudson Makuen (*American Medicine*, October 5, 1901) presents a paper on cleft palate and its relation to speech. The various defects of the palate which interfere with speech are (1) Perforations. (2) A lack of union between the lateral halves, commonly known as "cleft." (3) Paralysis of the muscles. Makuen emphasizes the importance of a few minor surgical procedures for the purpose of increasing the available size of the velum and giving it greater freedom of action. Briefly, they are as follows: (1) Separating the adhesions that often exist between the pillars of the palate on either side, and the remnant of tonsils. (2) Forcible stretching of the velum with the finger after the division of some of the tense fibres of the palato-glossi and the palato-pharyngei muscles. (3) Training and developing the velum palati muscles by means of both direct and indirect voluntary exercises.

Lecithin of the Egg; Its Therapeutic Employment.—Coulombe (*Le Mois Therapeutique*, September 30, 1901) states that lecithin exists in all the tissues, especially in those endowed with great vitality. From a therapeutic point of view, it is not toxic, and it is assimilated as a whole in ordinary doses. Its action consists in increasing the number of red corpuscles; in increasing, in certain cases at least, hemoglobin; in increasing urea and diminishing uric acid; in stimulating the appetite. Its employment is indicated in anemia, in all troubles of nutrition, in wasting diseases, and in neurasthenia. It may be administered hypodermically or by the mouth.

The Early Diagnosis and Treatment of Acute Mastoiditis.—Dr. T. H. Halsted, of Syracuse read a paper of this title before the Medical Society of the State of New York, October 15 and 16, 1901. He pointed out the ravages made by streptococci and influenza bacilli. The latter infection was peculiarly severe and destructive when it attacked the mastoid. Ice should be used only in the early stage, and if used properly would often make operation unnecessary. He has found cold superior to hot applications. Where there was evidence of accummulation in the middle ear, the drum should be freely incised. The canal should be kept clean by syringing; the common practice of insufflating powders was as unsurgical as it was dangerous.

The Treatment of Ozena by Methylene Blue.—At a meeting of the Academy of Medicine of Paris, October 6, 1901, M. Hallopeau narrated his favorable experience in the employment of methylene blue in ozena. He recommends the irrigation of the nasal-fosa with a 2½ per cent. solution of methylene blue. At first he advises that three irrigations be practiced each day, which may be gradually reduced to once a day. This drug has the inconvenient drawback of discoloring the nasal orifices and upper lip. ubut has against this rapidly to cause the disappearance of the fetid odor, and a cure is generally obtained in about three or four weeks.

SEROTHERAPY.

Serotherapy of Whooping Cough.—T. Silvestri (*Gazetta Degli Ospedali*, September 22, 1901, quoted in *Jour. Amer. Med. Ass'n*) reports that about 120 c.c. of blood were drawn from the arms of two children recovering fromh whooping cough. It was mixed with equal parts of saline solution and shaken up with 1 per cent. of chloroform and set aside to settle for twenty-four hours. It was then filtered and from 15 to 22 c.c. were injected into five other children with whooping cough. In two very severe cases the injection was repeated after five days. The effect of the serum treatment was evident at once. The general symptoms rapidly vanished and the cough and broncho-pneumonic phenomena also subsided completely in from eight to eleven days.

DISEASES OF THE MOUTH.

A Case of Buccal Affection Caused by Mercury, Resembling Relapsing Herpes of the Mouth.—G. E. Glartche (*Russki Arkhiv Patholigii*, August 31, 1901) reports the case of a patient, who, while undergoing mercurial treatment for syphilis, and for sometime following the treatment, suffered from an affection of the throat in which there appeared on the tongue as well as the throat certain round or oval plaques, which were of a white color and extremely painful. They were quite superficial. They would entirely disappear and reappear again within five days to a week, and this continued for about three months. The case resembled relapsing herpes, but the author describes the condition as due unquestionably to the mercurial treatment.

URINARY CHEMISTRY.

The Value of the New Nitro-propiol Test for Sugar.—S. Gatecki (*Gazeta lekarska*, 1901), in working on the nitro-propiol test described by Gordon in *The Lancet* of 1900, found that there are certain reducing substances in every urine which reduce the nitro-propiolic acid to indigo, thus rendering the test worthless. In order to exclude this source of error Gordon advised to dilute the urine 15-20 times, but the author found that a dilution of at least 1 to 50 is necessary to accomplish the exclusion of the reducing substances in normal urine. In one sample of urine, free from albumin and sugar, a dilution of 1 to 250 was found necessary. Owing to the necessity of such high dilutions, the test has no clinical significance and is inferior to the other tests for glucose.

LEPROSY.

The Treatment of Leprosy with Rattlesnake Poison.—Dr. J. Goldschmidt (*Deutsch. Med. Wochenschrift*, No. 2, January 10, 1901) states that the action of rattlesnake poison upon leprosy is analogous to that of tuberculin. For the local treatment he recommends a remedy giving off free iodine. Everything depends upon the early and persistent application of the remedy. He has had no experience whereby he can determine whether Finsen's light treatment is effective in be-

ginning leprosy as it is in lupus. Treatment with cobra poison appears to the author to be coupled with the same poor results as the treatment with tuberculin or Carasquilla's serum.

MISCELLANEOUS.

Treatment of Exudates.—E. Homberger (*Dermatologisches Centralblatt*, September 7, 1901, quoted in *Jour. Amer. Med. Ass'n*). The fluids of the body always seek to maintain an osmotic balance. If we assume that the blood and an exudate or transudate have the same osmotic tension, dilution of the blood will be followed by the passage of the excess of water into the exudate, reducing the osmotic tension of the latter, while the concentration of the blood increases in proportion. As the blood becomes more concentrated, the exudate is reabsorbed under the action of the laws of osmosis. Homberger states that by utilizing these principles we have an effective means at our disposal of promoting reabsorption of exudates and transudates. The blood can be diluted by the administration of water. It is absorbed more readily if taken in small amounts in an empty stomach, and most rapidly of all, when the water is slightly acid and weak in salts. Nature demands water in infectious fevers and lemonade not only relieves the thirst, but has a directly curative influence on the disease by promoting osmosis. The benefit of saline infusion is directly due to water. In diabetes, the sugar in the blood causes absorption of water from the tissues, in Nature's attempt to restore the balance of osmotic pressure. The overfilled vascular system empties the excess of water into the kidneys, while Nature calls for more water to supply the demand, thus explaining the polyuria and thirst in diabetes. Homberger concludes by stating his belief that, in therapeutics, the internal use of water is as important as its external use, and that it can be harmful only in exceptional cases. Simmonds announced last year that in none of the autopsies which he has conducted was he able to detect any indications that the infusion of saline solution had been responsible for dilatation of the right ventricle. The great objection, that a weak heart is not able to stand it, is thus shown to be unfounded.

An Aid in Seasickness.—R.Heinz (*Münchener Medicinische Wochenschift*, September 17, 1901) calls attention to the close proximity of the vomiting and respiratory centers and describes an experiment on dogs which showed that by inducing apnea by artificial respiration it is possible, so far, to inhibit the vomiting center as to destroy the effect of emetic subcutaneous doses of apomorphine. Further observations led to the discovery of the fact that by taking several deep breaths in rapid succession a state of sufficient apnea can be voluntarily produced to counteract vomiting stimuli, and the author recommends that in seasickness, at each crisis, this method be taken to forestall the threatened vomiting.

Intravertebral Injections of Cocain.—Achard and Laubry (*Bulletins et Memoires de la Societe Medicale des Hôpitaux de Paris*, July 25, 1901, No. 26) report the results of their experiments with cocain injected intravertebrally. They use 1 cg. for a lumbar injection, 2 cg. diluted in 4 4 or 5 c.c. of normal salt solution, for a sacral injection. The accidents which may follow are vertigo, headache, vomiting, fever, perspiration, and diarrhea. But with the patient lying down, none of these complications occur. They report 22 new cases thus treated. Lumbar injections had no effect in three cases, of lumbago, herpes zoster, and sciatica. In 10 cases (lead colic, tabes, herpes zoster, and sciatica) there was temporary relief of the pain. In the other 9 cases, tabes, herpes zoster, lead colic, sciatica, lumbago, and neuralgia, lumbar injections of cocain produced marked amelioration. With the nine cases already reported, they have had 4 failures, 14 improved, and 13 cases greatly improved. Extrameningeal injections were tried in 10 cases with unfavorable results. The sacral injection is only used when the pain is less acute, or when the patient cannot be kept quiet long. They believe that these methods have a great therapeutic future. The effect of the first injection should be carefully watched before a second is given.

The Antitoxic Properties of Bile.—Galavielle and Aoust (*Montp. Med.*, July 7, 1901), have attempted to employ the antitoxic properties of bile for the cure of hydrophobia, but with varying results. The authors' experiments show that normal bile as well as that of rabbits suffering from hydrophobia neutralizes the lyssa poisoning within a few minutes. The investigations are still in an early experimental stage, but it has been ascertained that the injection of normal bile or that from animals suffering from hydrophobia does not produce immunity from hydrophobia.

The Three Hypertensions.—Huchard, (*Jour. des Praticiens*, July 6, 1901), discusses clinically and therapeutically the three hypertensions, arterial, pulmonary and portal hypertensions. Increase in the arterial tension, from the cardiac impulse, is shown physiologically by excitation of the cardiac nerves, and clinically by ventricular weakness. The main cause of the tension, however, is increased tonicity of the arteries, which is in turn due to increased resistance in the peripheral circulation. Heart trouble which begins in the heart generally shows hypotension, while that which commences in the arteries causes hypertension. For the latter condition, Huchard advises hypotensive treatment, in the condition described as prescierosis,in angina pectoris, stenocardia, uremia, gout, interstitial nephritis, etc., all heart conditions of arterial origin. The great cause of these conditions is excessive meat diet. Erythrol tetranitrate will be found of great use in these affections, with massage, and a diet of milk and vegetables. Organotherapy may eventually be of aid in treating these diseases. Pulmonary hypertension exists with mitral disease, especially of the mitral valve. Aortic and pulmonary hypertension may be present together, causing arhythmic palpitation. Then the same hypotensive treatment used for arterial hypertension will prove effectual. Portal hypertension begins in the veins, and is found physiologically with anemia, arterial hypotension, and toxic symptoms. Clinically the condition occurs with pylephlebitis, atrophic cirrhosis of the liver, uncompensated heart lesions, etc. It may be acute, sub-acute, or chronic. It is occasionally noted at the menopause, and may cause hemorrhages and obesity. Abdominal massage, and a diet of milk and vegetables constitute the treatment. Digitalis and theobromin may aid. These conditions of hypertension may co-exist; then the prognosis becomes serious. Each one of them must be well treated, and quickly, especially the last, to prevent the development of ateriosclerosis, and heart lesions, later. The best means of treatment is the hypotensive method, states Huchard.

Proteids in Milk Mixtures.—*Pediatrics* (November 15, 1901) says editorially: "In an article with the above title, in the *American Journal of the Medical Sciences*, October, 1901, Dr. Thompson S. Westcott shows the theoretical possibilities of the modification of milk with whey. This method of modification is by no means new, but only recently have attempts been made accurately to determine the composition of such mixtures. White and Ladd, of Boston, published an able lengthy paper on this subject early this year (*Philadelphia Medical Journal*, Feb. 2, 1901), but set forth no rules for the practical application of the useful knowledge therein contained. This Westcott does in a series of formulae derived from Taylor's formulae for the modification of milk by the introduction of the empirical ratio existing between caseinogen and lactalbumin in cow's milk, which, following the analysis of Van Slyke, he takes to be 4-1. Human milk contains 0.59 per cent caseinogen with 1.23 per cent. lactalbumin, according to König, quoted by Westcott, while cow's milk contains 2.48 per cent. case-

inogen with only 0.66 per cent. lactalbumin (Van Slyke). So it is evident that sufficient dilution to bring down the percentage of caseinogen in cow's milk to anything like the quantity found in human milk dilutes the lactalbumin to a very low percentage indeed. This reduction of lactalbumin can be, in a measure, avoided by the use of whey as a diluent. The author follows White and Ladd's suggestion of making whey of fat-free milk so that the calculations are somewhat simplified. This whey made from fat-free milk is said to contain practically no fat and aproximately 1.00 per cent. of lactalbumin and 4.48 per cent. sugar. 'Hence it is evident that in any mixture containing whey the percentage of lactalbumin could not exceed 1.00 per cent. and could never quite reach this figure, since cream or milk added to the mixture to supply fat would have the effect of diluting the whey and thus diluting the lactalbumin percentage below 1.00. This could not be entirely made good by the added milk or cream, since the lactalbumin percentage of milk or cream is only one-fifth of its total proteids.' The author adds a table calculated from the formulae showing the maximum and minimum percentage of caseinogen and lactalbumin obtainable with any definite fat percentage. The article also contains explicit directions for the preparation of the mixtures and examples of the practical application of the formulae. It will repay careful study."

The Sanitary Method of Marketing Milk.—Henry Dwight Chapin, of New York, Chairman of the Milk Commission appointed by the Medical Society of the County of New York, reports (*Medical Record*, October 19, 1901) upon the summer work of the commission. The commission have considered: (1) The condition of the barns. (2) The condition of cows. (3) The milkers (4) The condition of utensils. (5) The processes of cooling. (6) Transportation. (7) Condition of cans or bottles when returned from the city. Considerable amount of data is included in this article as a result of a summer study of the milk question. The information is the result of thirty visits made to various farms and dairies, some at a distance of 180 miles. Each of these visits consumed, at least, one day, and some several days, so that a thorough study of the matter could be made. In general, they suggest that the essential conditions for thorough sanitary preparation of milk may be included under three heads: First, strict cleanliness, which includes the barns, yards, cows, milkers, and all utensils. Bacteria which get into the milk by means of dirt are thus thoroughly excluded. Second, rapid and sufficient cooling of the milk. The few bacteria that do get in are thus prevented from growing. Third, thorough icing around the milk until it reaches the consumer. The production of toxins from the growth of bacteria is thus retarded.

The Radical Cure of Varicose Ulcers by Trophic Elongation of the Nerves.—In the *Bulletin Medical* (June 26, 1901,) Dr. A. Chipault discusses the treatment of chronic leg ulcer by trophic elongation of the nerves, an operation first attempted by him in 1897. This method is divided into two steps, (1) the elongation of the nerves supplying the area in which the ulcer is situated, and (2) the treatment of the ulcer. This consists of a preliminary disinfection with antipyrin, then of curetting and suturing the edges together, under general anesthesia. Nine case-histories follow in detail. Five ulcers totally recovered; four ulcers could not be curetted. Yet the results were 8 cures, with one partial recovery, nor has the ulcer again broken down in any case, since. Chipault then reviews the results obtained by other surgeons, less satisfactory than his own. This is due to their modes of treating the ulcers, the attending varices, and the nerves. He concludes that trophic elongation of the nerves should be performed at a slight distance from the ulcer, with careful attention to the ulcer itself.

Formulae.

RESPIRATORY TRACT.

Acute Bronchitis.—Sir T. Granger Stewart advises in strong patients of a well marked sthenic type the use of antimony made up in the following formulae:

℞

Vinii antimonii Vini ipecacuanhæ	āā	f. ʒ iii
Spiritus chloroformi		f. ʒ iss
Liquoris ammonii citratis	q. s. ad	f. ʒ vi

M. S.: One tablespoonful in water every six hours; or:

℞

Vini antimonii		f. ʒ ii
Spiritus etheris nitrosi		f. ʒ ss
Liquoris ammonii acetatis	q. s. ad	f. ʒ vi

M. S.: One tablespoonful in water every six hours. Discontinue when there are symptoms of depression or when free expectoration is established.

Chronic Bronchitis (*Mississippi Medical Record*, Nov., 1901):

℞

Potassii iodidi		ʒ ii
Syrupi picis liquidae		f. ʒ iii
Syrupi acidi hydriodici	..	f. ʒ v
Syrupi tolutani	q. s. ad	f. ʒiii

M. Sig: One teaspoonful four times a day in water.

The aromatic balsams, combined with mild anodyne, are serviceable if the cough becomes troublesome:

℞

Balsami copaibæ Pulveris camphoræ	āā	ʒ i
Pulveris acaciæ		q. s.

M. et fiant capsules No. xv.
S.: Two capsule four times a day; or:

℞

Copaibæ		ʒ ii
Spiritus chloroformi		f. ʒ ss
Mucilaginis acaciæ		f. ʒ vi
Aquae camphoræ	q. s. ad	f. ʒ vi

M. et fiat mistura.
S.: Two tablespoonfuls three times daily.

Turpentine is sometimes very efficacious, and it may be given in capsule or in the form of an emulsion.:

℞

Olei terebinthinæ		f. ʒ ii
Mucilaginis acaciæ		f. ʒ i
Aquae amygdalæ	q. s. ad	f. ʒ vi

M. et fiat. mistura.
S.: Two tablespoonfuls at each dose, every six hours.

Acute Bronchitis. (*Mississippi Medical Record*, Nov., 1901):

℞

Ammonii carbonatis		ʒ iss
Ammonii bromidi		ʒ ii
Vini ipecacuanhæ		f. ʒ iv
Aquae menthae piperitae	q. s. ad	f. ʒ iii

M. S.: One teaspoonful every four hours in water; or:

℞

Ammonii chloridi Sodii salicylatis	āā	ʒ ii
Tincturae hyoscyami		f. ʒ v
Misturae glycyrrhizæ compositae	q. s. ad	f. ʒ iii

M. Sig.: One teaspoonful every four hours.

Pneumonia,—(*Jour. Amer. Med. Assoc.*, Nov. 2, 1901). The following is advised in the third stage where resolution is delayed and the cough troublesome:

℞

Codeinae sulphatis		gr. vi
Ammonii carbonatis		ʒ j
Aquae camphoræ		f. ʒ j
Syrupi tolutani	q. s. ad	f. ʒ iij

M. S.: Teaspoonful every three hours.

Chronic Bronchitis.—Saint-Philippe (*Journal de medecine de Paris*, Sept. 1, 1901):

℞

Iodidi arsenici	gr. iv ss
Aquae destillatae	f. ʒ vii ss

M. S.: Five drops after each meal; increase one drop night and morning until twenty to twenty-five drops at each meal.

EAR, NOSE AND THROAT.

Acute Tonsillitis.—Ashby (*Medical Record*, October 19, 1901):

℞

Sodii salicylatis	
Potassii citratis	āā gr. xl
Syrupi pruni virginianae	f. ʒ ijss
Aquae	q. s. f. ℥ ij

M. S.: Dessertspoonful every 3 hours for a child of six years.

Sore Throat in Scarlet Fever. (*The Medical Standard*, October, 1901):

℞

Acidi carbolici	f. ʒ ss
Glycerini	
Aquae camphorae	f. ℥ j
Potassii chloratis	x gr.
Aquae	q. s. ad f. ℥ vi

M. S.: Use as a gargle or spray.

Nasopharynx in Scarlet Fever.—A. Seebert (*Merck's Archives*, 1901):

℞

Tincturae iodidi	ʒ ss
Potassii iodidi	gr. xvi
Acidi carbolici	ʒ x
Aquae destillatae	f. ʒ x

M. S.: Teaspoonful every hour.

NEURALGIA AND ALLIED CONDITIONS.

Chronic Rheumatism.—H. A. Hare (*Medical Record*, October 19, 1901):

℞

Aquae ammoniae fortioris	f. ℥ ss
Olei cajuputi	f. ʒ j
Tincturae belladonnae	f. ℥ j
Linimenti camphorae	q. s. f. ℥ vij

M. S: Apply.

Sciatica.—Chronic cases. (*New England Medical Monthly*, November, 1901):

℞

Potassii iodidi	℈ j
Decocti sarsaparillae compositi	f. ℥ ij

M. S.: To be taken three times a day.

GENITO-URINARY SYSTEM.

Gonorrhea.—Dokerchaieff (*Medical Record*, October 5, 1901):

℞

Bismuthi subgallati	
Pulveris acaciae	āā ʒ ii
Aquae destillatae	f. ℥ iii

M. S.: Use as an injection every 2 hours.

Cabah suggests the following:

℞

Plumbi acetatis	
Acidi tannici	
Zinci sulphatis	
Cupri sulphatis	āā gr. ii

M. et fiat tabella No. I.

S.: One tablet in four ounces of water and use as injection.

SKIN DISEASES.

Ichthyosis.—G. H. Fox (*Photo. Atlas of the Diseases of the Skin*, Part ix). After bathing daily with warm water and soap the following solution should be used:

℞

Glycerini	iii
Sodii boratis	v
Aquae rosarum	ad c

M. S.: Use locally.

Alopecia Communis.—*Merck's Archives*, October, 1901):

℞

Chloral hydratis	ʒ vi ss
Spiritus vini gallici	f. ℥ viii

M. S.: To be rubbed thoroughly into the scalp.

Also,

℞

Tincturae cantharidis	ʒ iss
Olei bergamottae	*m* xxiv
Olei ricini	ʒ ij

M. S.: Rub in scalp.

Keratosis Follicularis.—G. H. Fox (*Photo. Atlas of the Diseases of the Skin*, Part ix) gives an ointment to be used after mild measures have failed:

℞

Pulveris pumicis	x
Sulphuris praecipitati	xx
Saponis mollis	xxxv
Adipis	ad c

M.

Or,

℞

Naphtholin	x
Cretae preparatae	v
Adipis lanae hydrosi	xxx
Adipis	xxx
Saponis mollis	ad c

M.

Pruritus Ani.—*The Medical Standard* (October, 1901):

℞

Sodii hypophosphitis	℥ ss
Acidi carbolici	f. ℥ j
Aquae	f. ℥ iv
Glycerini	f. ʒ ii

M. S.: Use during the day after washing the parts; clean after having motion; at night dust with iodoform.

℞

Iodi	gr. xv
Potassii iodidi	gr. xl
Aquae	f. ℥ v

M. S.: Apply with sponge every two or three hours.

℞

Hydrargyri chloridi mitis	xxxv
Unguenti picis	ʒ j
Unguenti stramonii	āā ʒ ij

M. et fiat unguentium.

S.: Introduce into the rectum night and morning.

Pruritus Vulvae.—L. Siebourg (*Canada Medical Record*, October, 1901):

℞

Cocainae hydrochloratis	ʒ ss
Orthoformi	gr. xxiii
Menthol	gr. viiss
Acidi carbolici	gr. xv
Vaselini	ʒ vss

Impetigo Contagiosa.—G. H. Fox (*Photo. Atlas of the Diseases of the Skin*, Part ix) gives the following to be applied after removal of the crusts.

℞

Hydrargyri ammoniati	
Unguenti aquae rosarum	

M. S.: Use locally.

Keloid.—G. H. Fox (*Photo Atlas of the Diseases of the Skin*, Part ix) recommends after using the galvano cautery the tumor is covered with the following ointment:

℞

Ichthyol	
Pyrogallol	x
Collodii flexilis	ad c

M. S.: Use locally.

Chalazion.—(*Jour. Amer. Med. Assoc.*, September 21,1901):

℞

Iodi puri	gr. iij
Potassii iodidi	gr. iv
Lanolin	3 j
Petrolati liquidi	f. ʒ iiss

M. S.: To be applied locally at night.

CHILDREN'S DISEASES.

Tracheabronchitis in Children.—Markan (*Medical Press and Circular*, October 2nd, 1901) uses the following when the cough is out of proportion to the inflammation and when it prevents sleep:

℞

Syrupi aurantii flori	
Syrupi codeinae	āā f. ʒ iv
Tincturae aconiti	*m* vi
Aquae	f. ʒ j

M. S. Teaspoonful daily for every three months of the child's age.

Whooping Cough.—F. F. Carger (*Pediatrics*, September 15, 1901):

℞

Heroin hydrochloratis	gr. ¼-½
Tincturae belladonae	*m* Lxiv
Spiritus frumenti	f. ʒ j
Syrupi simplicis	q. s. ad f. ʒ iv

M S.: Teaspoonful every five or six hours.

Emetic for Children.—(*Medical Record*, October 5, 1901, from *Pediatrics*):

℞

Pulveris ipecacuanhae	gr. viiss
Antimonii et potassii tartratis	gr. 1/6
Aquae destillatae	q. s. ad f. ʒ i

M. S.: Teaspoonful every 15 minutes.

Pleurisy with Effusion in Children.—Widerhofer (*New Orleans Medical and Surgical Jour.*, Nov., 1901), recommends the following:

℞

Potassii acetatis	gr. xx-xl
Syrupi simplicis	f. ʒ iii
Infusi digitalis	q. s. ad f. ʒ iii

M. S.: One teaspoonful every two hours.

℞

Potassii acetatis	gr. xx-xl
Syrupi aurantii	f. ʒ iii
Decocti cinchonae	q. s. ad f. ʒ iii

M. S.: One teaspoonful every two hours.

As external application he recommends the following:

℞

Iodidi	gr. iss
Potassii iodidi	ʒ iiss
Glycerini	ʒ iss

M. flat Linimentum

S.: For external application, once or twice daily.

Capillary Bronchitis in Children.—Markan (*New York Medical Journal*, November 2, 1901, from *Medical Press and Circular*, October 2, 1901):

℞

Tincturæ ammonii	gtts xv
Cognac	
Syrupi aetheris	āā gtts iv
Ammonii acetatis	gtts xv
Syrupi acaciæ	f. ʒ ij

M. S.: Teaspoonful dose.

DIGESTIVE TRACT.

Treatment of Dysentery.—R. A. Mate (*The Canada Medical Record*, October, 1901):

℞

Magnesii sulphatis	3 j
Acidi sulphurici diluti	*m* x
Quininae sulphatis	gr. j
Hydrargyri perchloridi	gr. 1/32
Tincturae opii	*m* x
Aquae menthae piperitae	q. s. ad f. ʒ ss

Sig.: Every three hours.

Irrigations of boric acid (a drachm to the pint) also give great relief.—*British Medical Journal.*

Fermentative Diarrhea.—J. W. Hyde, (*Medical Record*, October 5, 1901):

℞

Bismuthi subgallati	
Salol	
Cerii oxalici	āā gr. i
Tincturae ipecacuanhae et opii	gr. ii
Olei anisi	*m* 1/10

M. et divide in capsule No. j.

Lienteric Diarrhea.—(*Medical Record*, October 5, 1901, from *Medical Summary*):

℞

Sodii salicylatis	3 ii
Tincturae opii camphoratae	f. ʒ ii
Extracti cannabis indicae fluidi	f. 3 i
Syrupi rhei aromatici	f. ʒ ij
Olei myristicae	f. 3 j
Listerine	q. s. ad f. ʒ v

M. S.: Teasponful in water frequently repeated.

Gastric Ulcer.—Charles Robin (*Medical Record*, October 19, 1901):

℞

Cocainae hydrochloratis	
Codeinae	āā gr. j
Liquoris calcis	f. ʒ v

M. et. S.: Dessertspoonful when pain supervenes.

Or,

℞

Lactose	gr. xv
Magnesiae ustae	3 ss
Bismuthi subnitratis	
Cretae preparatae	āā gr. xij
Codeinae	gr. 1/5
Sodii bicarbonatis	gr. xv

M. et fiat cachet No. I.

S.: One every three hours.

Typhoid Diarrhea.—Hudson (*Medical Record*, October 19, 1901:)

℞

Acidi carbolici	
Extracti opii	gr. j
Bismuthi subnitratis	gr. xviiij

M. et divide in pilulis No. vi.

S.: One three times a day.

Dysentery.—Hughes (*Medical Record*, October 19, 1901):

℞

Acidi sulphurici diluti	f. ʒ ss
Tincturae opii deodorati	
Spiritus camphorae	āā f. ʒ j
Tincturae capsici	
Spiritus chloroformi	āā f. ʒ ss
Spiritus vini gallici	f. ʒ jss

M. S.: Teaspoonful every two or three hours.

Or,

℞

Magnesii sulphatis	3 j
Acidi sulphurici diluti	
Tincturae opii deodorati	āā *m* x
Aquae chloroformi	q. s. f. 3 ij

M. S.: This dose every 3 hours

Diarrhea.—(*The Monthly Cyclopedia of Practical Medicine*, Oct., 1901):

Tincturae camphorae	f. ʒ ij
Extracti hamamelis fluidi	f. ʒ j
Acidi carbolici	f. 3 j
Extracti kino fluidi	
Tincturae zingiberis	āā f. 3 ij
Cretae preciptatae	ʒ j
Syrupi simplicis	q. s. ad f. ʒ viii

M. S.: Teaspoonful every three hours for adult.

MISCELLANEOUS.

Tympanites.—(*New England Medical Monthly*, November, 1901):

℞

Olei terebinthinae	f. 3 ss
Olei ricini,	f. 3 j
Tincturae opii	*m* xx
Acaciae	3 ss
Aquae	q. s. ad f. ʒ ii

M. et fiat emulsum.

S.: Tablespoonful and repeat in four hours if required.

Nervous Headache.—Barker (*Medical Record*, October 19, 1901):

℞

Zinci phosphidi	gr. iij
Extracti nucis vomicae	gr. x
Confectionis rosarum	q. s.

M. et divide in pilulis No. xxx.

S.: One after meals.

Catarrh of the Bile Ducts with Jaundice.—Farquharson (*Medical Record*, October 5, 1901):

℞

Ammonii iodidi	3 i
Liquoris potassii arsenitis	*m* xxx
Tincturae calumbae	f. 3 iv
Aquae destillatae	f. ʒ iss

M. S.: Teaspoonful before each meal.

Hemorrhoids.—Julie (*American Medicine*, November 2, 1901, from *Jour. des Praticiens*, April 20, 1901) recommends the region to be washed and iodoform vaselin ointment applied to the hemorrhoids. This is to be followed by the injection of 15 minims into the mass of

℞

Zinci chloridi	gr. vii ss
Cocainae hydrochloratis	gr. iii
Aquae destillatae	f. 3 v

M. S.:

Acute Albuminuria after Scarlet Fever.—Otto Maier (*New York Medical Journal*, November 2, 1901, from *Post-Graduate*, October) advises a bath daily and a milk and ice cream diet with the following:

Pilocarpinae hydrochloratis	gr. j
Infusi digitalis	f. ʒ iii

M. S.: Teaspoonful every three hours.

Also,

℞

Hydrargyri chloridi mitis	gr. ii ss
Pulveris jalapae	gr. ivss

M. et fiat, chart No. j

S. One to be taken twice a week.

Amenorrhea.—(*Merck's Archives*, October, 1901):

℞

Liquoris ferri et quininae citratis	f. ʒ j
Liquoris acidi arseniosi	f. 3 iij
Atropinae sulphatis	
Strychninae sulphatis	āā gr. ss
Elixirii aurantii	q. s. ad f. ʒ viii

M. S.: Teaspoonful in water before meals three times a day.

Hematemesis.—Charles Robin (*Medical Record*, October 19, 1901):

℞

Acidi tartarici	gr. xv
Pulveris opii	gr. 1/3
Magnesii	gr. ij

M. et fiat cachet No. I.

S.: One before meals.

Or,

℞

Picrotoxini	
Morphinae sulphatis	āā gr. j
Atropinae sulphatis	gr. 1/5
Extracti ergotae	gr. xx
Aquae lauro cerasi	f. 3 iij

M. S.: Five or ten drops before eating.

Nervous Symptoms of Menopause. (*The Monthly Cyclopaedia of Practical Medicine*, Oct., 1901, from *St. Clinique*) (?):

℞

Ammonii bromidi	3 ij
Potassii bromidi	3 iv
Spiritus ammoniae aromatici	f. 3 vi
Aquae camphorae	q. s. ad f. ʒ vi

M. S.: Dessertspoonful every four hours.

Epsom Salts Made Palatable.—(*The Monthly Cyclopaedia of Practical Medicine*, Oct., 1901):

℞

Magnesii sulphatis	3 ss
Acidi sulphurici diluti	*m* ij
Syrupi limonis	f. ʒ ss
Aquae	q. s. ad f. ʒ ij

M. S.: The above at a dose.

To Produce Sleep.—(*Monthly Cyclopedia of Practical Medicine*, Oct., 1901):

℞

Morphinae hydrochloratis	gr. 1/6
Aquae chloroformi saturati	
Aquae aurantii fluidi	āā f. ʒ j
Syrupi simplicis	f. ʒ ss

M. S.: Half the quantity at a dose.

Aneurysm.—(*Merck's Archives*, October, 1901):

℞

Potassii iodidi	3 iiss
Tincturae digitalis	f. 3 iss
Syrupi simplicis	f. ʒ jss
Aquae	q. s. ad f. ʒ x

M. S.: Teaspoonful three times a day.

Angina Pectoris.—(*Merck's Archives*, October, 1901). The following formula is often used in the prophylactic treatment:

℞

Potassii iodidi	3 iss
Potassii bromidi	gr. xxxxv
Aquae destillatae	f. ʒ iv
Aquae menthae piperitae	f. ʒ vi

M. S.: Tablespoonful three times a day, before meals.

Ascites.—A. H. Biggs (*Merck's Archives*, October, 1901.

℞

Elaterii	gr. 1/15
Strychninae sulphatis	gr. 1/40
Spiritus glonoini	gr. 1/200
Extracti digitalis	gr. ¼
Caffeinae citratis	gr. j
Pulveris caryophilli	gr. j

M. et divide capsule No. I.

S.: Give one capsule every three to six hours.

Galactorrhea.—(*Jour. Amer. Med. Assoc.*, September 21, 1901):

℞

Unguenti belladonnae	
Lanolin	ää 3 iv

M. S.: Apply locally twice daily.

Coccygodynia.—Whitla (*Medical Record*):

Extracti belladonnae	gr. 1/4
Extracti hyoscyami	
Iodoformi	ää gr. 3/4
Olei theobromae	gr. x

M. et fiat suppositoria No. I.
S.: Employ at bed time.

Hypnotic in Heart Disease.—Clevenger (*The Medical Fortnightly*, September 25, from *Medical Review of Reviews*):

℞

Chloralomide	ʒ ij
Spiritus vini gallici	f. ʒ j
Syrupi rubi idæi	f. ʒ j

M. S.: Half-teaspoonful at a dose.
Also;
Lettow's prescription for an enema consists of the following:

Chloralomide	gr. xlv
Acidi hydrochlorici	*m* ij
Alcoholis	*m* xv
Aquae destillatae	f. ʒ iij

M. et fiat enema.
S.: To be used as directed.

Persistent Hiccough.—(*The Kansas City Medical Record*, September 1901):

℞

Strychninae sulphatis	gr. 1/40
Camphorae monobromatae	gr. ½
Hyoscyami	gr. 1/50

M. S.: For one dose. Repeat according to indications

Book Notices.

Diagnosis of Internal Medicine. A Clinical Treatise Upon the Recognized Principles of Medical Diagnosis, prepared for the use of Students and Practitioners of Medicine. By Glentworth Reeve Butler, A. M., M. D. D. Appleton & Co., New York. 8vo., pp. xxviii—1059.

This attractive looking volume from the press of Appleton and Company adds another to the growing number of books on the subject of diagnosis. An increasing demand for such books is a healthful sign, as it points to a growing interest in accuracy of diagnosis as a necessary preliminary to the treatment of disease. While the volume before us does not claim to add much to our knowledge on this subject, it presents existing knowledge in an attractive shape, further elucidated by numerous new illustrations.

The method of the author is as follows: To a brief section on history-taking succeeds a longer one on the study of symptoms and their significance—in a word, a section on general symptomatology. The card-system of note-taking is recommended. We are using this system, but realize that its true value cannot be determined until a large number of cases is collected, because not until then will the real difficulties in continuing it be apparent.

The section on the significance of symptoms will be found especially useful to students, if they can be made to avail themselves of it. This can best be done by the instructor assigning portions for reading, and then examining the student on them. Among symptoms treated in this section are pain, fever, dropsy, edema, cough, the variously modified sensations, vertigo, the rashes, secretions, etc. It appears to us that rather an undue space is given, with a freer use of half tones than is necessary, to the differentiation of pain. Nor do we see any good reason why the nude figures of women should be used rather than of men. No better illustrations can be made than those found in Musser's and Jakob's books, which in no way offend the proprieties. On the other hand, the illustrations employed in describing the symptoms and signs referred to the heart and lungs are especially valuable.

Then follows the examination of the various organs and cavities of the body including the mouth, stomach, lungs, the heart, the brain, the organs of the special sense, the the blood, etc. We note what appears to us to be an error in the author's conception of what constitutes the strawberry tongue, though he is not alone in this conception. It is described as a "tongue covered with a white fur through which protrude swollen and bright red fungiform papillae." We confess this was our own impression at one time, but Dr. M. Howard Fussell called attention to the errroneousness of this definition in a short paper in the *University Medical Magazine* for May, 1897, and insisted that the correct description was that of the elder Flint with whom originated the term. Flint's description is as follows: "Another appearance is quite distinctive of scarlet fever. In the progress of the disease, the coating exfoliates, leaving the surface of the tongue *clean* and *reddened*; and the papillae being enlarged, the appearance is strikingly like that of a ripe strawberry. The strawberry-like tongue is a pathognomonic symptom; it is peculiar to this disease. It is often not uniformly present."

Most interesting to the practicing physician will be found the last section, which treats of the various diseases of the body and their mode of recognition. Brevity and condensation characterize this section, but it will be found of great practical value to the physician who wishes to look up in a short time the distinctive symptoms of a disease which he suspects.

We desire in conclusion to enter a mild protest against the term, "Internal Medicine," employed in the title, and now quite commonly used in this country. This, it is well known, has been adapted from the German. It is true that much of medicine as contrasted with surgery pertains to internal organs. On the other hand, medicine is not confined to internal organs, while surgery also applies to them, indeed, at the present day, surgery is very much internal. Is there any real good reason, therefore, for using this term instead of "General Medicine," for what is commonly included under the latter word? [J. T.]

Books Received.

A System of Physiologic Therapeutics. A Practical Exposition of the Methods, Other than Drug-Giving, Useful in the Prevention of Disease and in the Treatment of the Sick. Edited by Solomon Solis Cohen, A. M., M. D., Professor of Medicine and Therapeutics in the Philadelphia Polyclinic; Lecturer on Clinical Medicine at Jefferson Medical College; Physician to the Philadelphia Hospital, etc. Volume III—Climatology, Health Resorts, Mineral Springs. By F. Parkes Weber, M. A., M. D., F. R. C. P. (Lond.), Physician to the German Hospital, Dalston; Assistant Physician North London Hospital for Consumption, etc. With the Collaboration for America of Guy Hinsdale, A. M., M. D. Secretary of the American Climatological Association, etc. In Two Books. Book I,—Principles of Climatology—Ocean Voyages—Mediterranean, European and British Health Resorts. Book II—Mineral Springs, Therapeutics, etc. Illustrated with Maps. Price for the complete set, $22.00 net.

The "Therapeutic Monthly" acknowledges the receipt of the following publications Reviews of those bearing on this subject will appear shortly in the journal.

The Diagnosis of Nervous and Mental Diseases. By Howell T. Pershing, M. Sc. M. D. Professor of Nervous and Mental Diseases in the University of Denver; Neurologist to St. Luke's Hospital; Consultant in Nervous and Mental Diseases to the Arapahoe County Hospital; Member of the American Neurological Association. Illustrated. 12 mo. Published by P. Blakiston's Son & Co., 1012 Walnut St., Philadelphia. 1901. Price, in cloth, $1.25 net.

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The Employment of the Iodides.—The very general employment of the iodides in so many diverse conditions would imply one of two things: that the sphere of usefulness of these remedies is almost without limit or that they are used empirically. The latter we are forced to acknowledge is true. It may be said that in the treatment of tertiary syphilis they have proven invaluable, but in the earlier stages of the disease they are of little service. We find them of value in many diseases which are not directly attributable to syphilis, especially in such cases in which there is a past history of this disease. Thus, as Cushny mentions, neuralgia and other nervous disturbances are often relieved by them in cases of syphilitic taint. In chronic rheumatism the drug has a pronounced value. In the treatment of goiter it was formerly much employed, but thyroid extract has superseded it almost entirely. The iodides have been also much used in the treatment of obesity. In a certain class of cases dependent upon thyroid insufficiency, a considerable decrease in weight follows a course of iodides. In a large number of cases, however, it has been found that the iodides tend rather to increase than decrease the body weight. We have of late come to believe that aneurysmal conditions are not improved with large doses of iodides, save in those cases in which there is a clear syphilitic history. There seems to be an especial ground for believing that the iodides are of value in conditions of arteriosclerosis, other than that dependent upon syphilitic disease. The iodides are used in combination with other remedies in expectorant mixtures, and they have been found of value in some cases of asthma, probably on account of the fact that they may render the bronchial mucus more watery and less tenacious. It is well known that the iodides must be administered with great care in cases of phthisis, for in this condition they increase the cough and expectoration, and possibly the tendency to hemoptysis. The disagreeable symptoms of iodism which are apt to follow the protracted use of iodides seem very difficult of certain prevention. The iodides are frequently combined with carbonate of sodium or with sulfanilic acid, and while those combinations seem to be of service in a limited number of cases, we are not sure that iodism will be prevented by them. Very recently Dr. Ralph Stookman and Dr. Francis J. Charteris have investigated the action of the iodides on the heart and blood vessels, and their paper appeared in the *British Medical Journal*, of November 23, 1901. On account of the wide employment of the iodides on purely empirical grounds, the systematic investigations which these authors have carried on are of great interest. They have made a large number of observations on the blood tension and pulse rate of patients taking potassium or sodium iodides. A number of the patients who were studied were taking from 15 to 40 grains a day; one was taking 180 grains, and a single patient suffering from spinal sclerosis took 200 grains a day. A number of the patients had no disease of the circulation, but were taking the iodides for such conditions as chronic rheumatism, sciatica, and facial paralysis. In another series of cases the patients were suffering from renal or cardiac disease, aneurysm, arteriosclerosis and bronchitis. One patient presented a severe case of iodism. The others had it to a very slight degree. A systematic series of observations was made during the administration of the iodides, but in not a single case did any fall in the blood pressure occur, or any change in the rate or rhythm of the heart. This was true in the patient who suffered from severe iodism who maintained his arterial tension, although his condition was depressed, and he felt extremely ill. The depression these investigators believe to be due to the coryza and partly to the action of the drug on the nervous system. Stookman and Charteris conclude that the iodides of potassium or sodium, given by the mouth in therapeutic doses, do not modify the physical conditions of the circulation, and neither do they directly weaken the heart or dilate the arterioles. It must be due to some other action of the drugs which probably holds true also of some of the rare cases of poisonous effects. Occasionally it may be observed that the iodides quicken and weaken the

pulse, and it has been found that this is especially likely to be the case in goiter. At times, too, every administration is followed by emaciation. These investigators believe that in neither case is this a direct fact, but that it is due to increased formation or alteration of the iodides upon secretion, which has a powerful effect on the circulation and metabolism. They have repeated a considerable amount of experimental work on the action of the iodides upon the circulation of animals, and they call attention to the difference in the effect of iodide of potassium as administered by the veins, and iodides of sodium administered in the same manner. The potash salt was an extreme cardiac depressant, while the sodium seemed to have little, if any effect. The reading of the work of these investigators can but be profitable on account of the wide range of their experiments, and the apparent soundness of their conclusions. It is further a contribution of pharmacologic value and supplies up with scientific views which may help to place our employment of the iodides upon a more rational basis.

The Treatment of Acute Bright's Disease.—In the *Practitioner*, for December, 1901, William Hale White has contributed a paper on the treatment of Bright's disease, which is a competent summary of the most approved measures of treatment arranged in a systematic helpful way. He divides Bright's disease, from the point of view of treatment, into those cases suffering from acute Bright's, from chronic tubal nephritis and from chronic interstitial nephritis. We shall consider but the first. The importance of treatment in this condition is paramount. For there exists the possibility of complete recovery, if the treatment is managed properly, and unless this is done the case will usually become a chronic tubal nephritis with its unfavorable prognosis. The most important point is to insist that the patient be kept at absolute rest in bed, being thus assured the favorable condition of equable warmth. The temperature of the sick room should be kept constantly at 65° F., with free ventilation. The diet should be milk, because it is especially suitable in fevers, and Bright's disease in its acute forms is often accompanied by pyrexia; and further in conditions of pyrexia milk is an ideal diet. Another paramount indication which is met in the administration of milk is, that it is most useful in washing out the renal tubules on account of its fluid character. Water in large quantities is not advisable and in this connection White mentions with deserved respect the investigation of Dr. D. L. Edsall of this city, who has proven that the continued drinking of an excessive quantity of water is bad, and White states that for the patient who is taking four pints of milk in 24 hours, it is necessary to add but a small amount of water, perhaps a pint or two to this quantity of fluid. White justly condemns alcohol in acute inflammation of the kidneys, as well as the administration of powerful diuretics, but he suggests that probably 20 grains of potassium acetate or citrate three or four times a day will be useful not only on account of the fact that they are diuretics, but that they will help to keep the urine alkaline. Cantharides or no other blistering preparations should be used. With some, he acknowledges the value of a dry cup in the lumbar region, and states that severe hematuria may be controlled by an ice bag over the kidneys. In order to keep the excretory organs active he advises jalap and scammony over night and sulphate of magnesia in the morning. To keep the secretions of the skin active he suggests the use of hot drinks, such as a large cup of weak tea and he advises a hot bath at night if this can be taken without the patient catching cold. Should a hypnotic be required, opium should not be used. He favors, in this contingency, chloralamide in doses of 20 to 30 grains dissolved in a little spirit. The anemia which is often present in the later stages of this condition may be treated by the administration of iron. Such preparation as do not constipate fulfil the indications. The treatment outlined should be continued until the albumin has disappeared from the urine or until the percentage has remained stationary from four to six weeks. White points out that if the latter condition pertains it is most probable that the case is incurable. On the other hand, if the albumin has disappeared, the further care of the case requires great judgment. The patient may first be allowed milk puddings and all farinaceous diet. The effect of this food must be watched carefully and altered gradually if he progresses well, until after the lapse of some weeks he may return to ordinary diet. It is important he should remain in bed until at least one week after the disappearance of the albumin, and equally important that when he is first allowed to go about he must be warmly clad and avoid taking cold. The weather should be warm and balmy or he should not be permitted to go out of doors, for it is to be remembered in those conditions that sudden changes of temperature are most deleterious. The warm bath at night should be continued for some time. It may be gradually replaced by a tepid bath followed in the morning by a brisk rubbing. The bowels should be kept open by the administration of Epsom salts or a similar drug. If possible the patient who is convalescent from acute Bright's disease should seek a warm equable cli-

mate. Should recovery not take place as evidenced by the disappearance of the albumin from tne urine, and the feeble and rather pale appearance of the patient, he should be enjoined to lead a quiet well regulated life, paying particular attention to avoidance of sudden changes of temperature, and use great discretion in his diet. The importance to the practitioner of grasping fully the essential points of treatment of acute Bright's disease is very great. We have emphasized above the most salient features of treatment, and the neglect of these even in a very slight degree may change the prognosis from a favorable one to the most grave.

The Treatment of Alcoholism.—There are few conditions presented to the practitioner which have afforded a greater diversity of professional opinion and in consequence perhaps a greater field for the charletan than the treatment of alcoholism in its various forms. In a recent article dealing with the treatment of delirium tremens and alcohol toxemia (*Medical Record*, December 14, 1901). Dr. T. S. Crothers, whose admirable work in this field is so well known, tells us that delirium following the use of alcohol is rapidly increasing and becoming more prominent every year. He records the fact that delusions of snakes and demons are seldom noted, but in their place are conceptions of enemies with guns, of falling walls in the building occupied by the victim, and constant apprehension of death by violence. He tells us further that any person who uses spirits to excess, at intervals or continuously, may have periods of delirium with delusions and sensory disturbances of short duration. In this paper he takes up the question of treatment and places the subject before us in a particularly logical light. His wide experience in confronting these conditions has led him to state that if the delirium comes on abruptly the exciting causes are acute and indicate the formation of toxins. In other words that a condition of auto-intoxication exists. If, however, the delirium has been preceded bv mental changes and transient alterations of thought and conduct in the patient, gradually becoming more constant and firmly fixed, those conditions would indicate organic lesions of the brain. Alcohol may be regarded as an exciting and predisposing cause, and it is necessary to inquire particularly whether the delirium follows from a long period of continuous drinking or from a periodical use of spirits, or whether it was preceded by great mental strain or physical disturbance, such as traumatism; and also to inquire into the hereditary influence at play. If the delirium is due especially to the use of spirits, there will be more hallucinations and motor disturbances. Should it follow some traumatic cause, the delusions will be more prominent and refer to some tangible object. An important class of cases is represented by patients presenting delirium following prolonged excess in the periodic drinker, when alcohol is abandoned before the delirium comes on, intense hallucinations of short duration and prolonged delusions follow. These latter patients frequently suffer from prolonged delusions concentrated upon one subject and are frequently committed to insane asylums. Dr. Crothers is of the opinion that the general pathology of these cases depends on a vasomotor paralysis particularly of the brain. The dilator and constrictor nerves in the walls of the arteries are affected and later congestion of the veins results. There follows a disturbance of the circulation, and venous congestion in the flushed face gives evidence of this. Dr. Crothers believes that the removal of the alcohol is the first step in the treatment and that it should be totally withdrawn. He does no favor the method of gradually reducing the amount of alcohol taken, but states that this part of the treatment must be carried out with vigorous care to avoid favoring the further growth of the toxins, that is, the source of this toxemia,—the alcohol. Catharsis must then be practiced, next to which in importance he places the hot water and hot air baths followed by hot packs with vigorous rubbing. Profuse sweating is of great help in these cases, not only on account of the increase in elimination which is thus brought about, but because of its sedative effect of the sudden drainage of the toxins through the skin, and the diversion of nerve energy. Frequent sponging with hot salt water is a most effective measure, and in some instances it approaches a specific. Hypnotics he regards as dangerous. For the craving of alcohol which is met with in many cases, he has recourse to the familiar strong solutions of quassia or cinchona, given every hour in large doses. He does not favor the forced feeding advocated by many practitioners in these cases, holding that the assimilation and digestion are enfeebled, that the metabolism is deranged, and that food is apt to cause an added degree of toxemia. Dr. Crothers discussing the restraint in these cases is of the opinion that the treatment should be carried on with as much individual liberty to the patient as possible, but in those cases, in which great exhaustion is present, rest in bed is essential, and the use of daily massage will be found of great benefit. Active exercise with the aid of baths and saline cathartics help to rid the patient's system of toxins and restore the metabolism.

The Untoward Results of Spinal Anesthesia.—Paul Reclus, Surgeon to the Paris Hospitals, has

contributed a most conservative and timely article on the question of the drawbacks to the spinal use of cocain, and the accidents which are attributable to it, in the *International Clinics*, Vol. III, Eleventh Series, 1901. This method of anesthesia has now been tried in a large number of cases, and the profession should be in a position to judge something definite of its merits or demerits from the reported cases. The development of this method may be said to have started with Quincke's idea in 1891 of puncturing the lumbar region in order to lessen pressure by allowing the escape of a small amount of the cerebro-spinal fluid. Shortly after this Sicard in France and Corning of New York suggested the feasibility of injecting in the same region medicinal substances for their drug effect on the spinal tissue, and those observers employed cocain. Bier, of Kiel, was the first to employ the method of spinal anesthesia for surgical operations in April, 1898, and he performed under this analgesia six major operations on the bones of the lower limbs. Dr. Paul Reclus, in the article to which we have referred, especially mentions the initial work of Dr. Bier in this field, and believes that the method should be justly called by his name. A number of operators followed Bier, the most noteworthy being Tuffier, who up to the beginning of the present year had made 300 lumbar injections as well as writing extensively upon the subject. It is not our purpose to deal with the technique of the method but to look for a moment on the results of this subarachnoid injection. Tuffier tells us that there follows an analgesic condition of the lower limbs and of the subumbilical and subdiapragmatic regions. Reclus takes exception to this statement, declaring that while it is sometimes true, it is not so universally, judging from his personal experience, and that of a large number of other operators. The analgesia sometimes begins, according to Reclus, in the feet, sometimes in the external genital organs, and sometimes in both, in a length of time which varies from five to ten minutes. In the successful cases of analgesia by the spinal injection of cocain, the analgesia is absolutely perfect. The patient is quiet and passive in the operator's hands, and since this analgesia may last from an hour to an hour and a half, it enables the surgeon to undertake the longest and most difficult operation. This picture, we may say, represents the more favorable side of the method, but it is well for us to inquire into the possible untoward effects and it is to this end that we find the contribution of Dr. Reclus of decided practical help. He tells us that the analgesia may fail altogether or be quite inadequate for two reasons. The first of these is, that the operator fails to make the injection; the needle either does not reach the cavity at all, or passes entirely through it. We may say that this failure of successfully accomplishing the introduction of the needle occurs much more frequently than operators are willing to admit. Reclus states that it occurred twice in his own series of cases. Granting that the injection has been successfully made, it may altogether fail to produce analgesia, or this may be of too short duration to enable the operation to be performed. Reclus tells us that this is supposed to occur in only two or three cases out of a hundred, but he believes that this percentage is entirely too low. He narrates a case in which it took analgesia an hour and a half to occur, during which time the patient had been carried back to bed, and the surgeon had left the hospital. Then again, analgesia may disappear quickly in far too short a time for the operation to be completed, as in a case which he mentions in which he was operating for the radical cure of hernia. Eleven minutes after the beginning of the operation the skin had already regained sensation.

Following upon the induction of cocain anesthesia, the patient may suffer from tingling, heaviness, sensations of numbness in the limbs, as well as severe trembling which sometimes interferes with the operator in his work. In 30 to 50 per cent of cases, nausea or vomiting occurs, which is distressing, not only on account of its frequency, but on account of the fact that it interferes with many operative measures. In one of Reclus's own patients this nausea, which is said to be but a temporary symptom, lasted six days. Another of his patients suffered from paralysis of the sphincter ani for seven days. Paraplegia is not unusual. One of his patients on whom dilatation had been performed for fissure, left the hospital cured on the third day, but that same night was obliged to return on account of weakness of the lower limbs. Headache, which is often unbearable, is the commonest symptom encountered. It occurs in about 50 per cent. of the cases, and while it usually disappears on the second day, it may last three or four days. Pyrexia is common. The temperature may rise after the operation to 103° to 104°, although it usually returns to normal in 24 hours. Reclus has collected from the literature six deaths directly due to this method, but he believes that there have been at least seven or eight such cases in a total of less than 2000 spinal injections of cocain. When it is remembered that one death in 2300 cases occurs when chloroform is used and one in 7000 from ether, and none in 7000 from the local use of cocain, the surgeon may well pause with Dr. Reclus and consider well this great mortality. Dr.

Tuffier in a monograph which appeared in the first part of the present year gave no space to the report of these fatal cases, and he still appears to think that the method is a safe one. We cannot do better than to conclude by quoting Dr. Reclus as follows: "In the presence of such a state of optimism it is necessary to sound a note of warning. Although I quite agree that the method should be further tested, I think, with Bier, the inventor of the method, that at the present time, and with a technique still uncertain, the lumbar injection gives a less degree of security than our ordinary anesthestics so that, until further proof is furnished, ether, chloroform, and the local use of cocaine cannot, without injustice and danger, be dethroned, even partially, from their present eminence."

The Treatment of Dandruff.—Isadore Dyer discusses this subject in the *Medical Review of Reviews*, (Nov. 25, 1901). As to the treatment of the condition he believes that while there is no specific, hygiene is of far more value than remedies of purely medicinal virtue. The first injunction he gives to patients who come to him with dandruff is "throw your hairbrush into the fire: don't use another until I tell you." He does not tell them until he has examined the scalp and found it free from dandruff. His experience has been that by the disuse of an infected brush, and with systematic washing of the scalp, men every other day, and women twice a week, with an after application of resorcin in bayrum, from 3 to 5 per cent., the absolute removal of dandruff results in most cases in three weeks, and in others in five or six weeks. He has never seen a case of dandruff which did not get well under this treatment. He has seen a number of cases where the man would not use his brush at home, but would let his barber brush his hair after shaving him, and then wonder why the treatment did him no good. In gray-haired individuals and in fair-haired women, resorcin sometimes causes a yellowish or reddish cast; it is recommended that salicylic acid be added to the solution of resorcin, as in the presence of acids the resorcin does not cause this change. Where there is any reason to forbid the use of resorcin, chloral hydrate in 2 to 5 per cent. strength may be used, or the naphthol preparations in strength of a scruple to the ounce. He has never used sulphur, nor sulphur compounds, because he has never needed to change from the pleasanter solutions. He believes that the crusade against this disease should begin with the barbershop and end in the legislature; that it should act at home and abroad until every school child should know it is as dirty to brush the hair with the hairbrush of any one else as it is to use a community toothbrush.

The Treatment of Epilepsy.—Dr. J. L. Bowman (*Medical Record*, Oct. 12, 1901) discussing epilepsy, pays especial attention to the treatment. Our best efforts should be directed towards preventing the first paroxysm. Prophylaxis directed toward rachitis or defective nutrition may be exerted through proper feeding. Careful treatment during the acute infectious diseases, and the regulation of diet will prevent the infantile convulsions. Hygienic measures connot be too strongly enforced. Let the patient live by the clock. Meat, as a food, should be forbidden absolutely, or given in small quantities. Keep track of the enormous appetite of the epileptic. Forbid the use of alcohol, and insist on the use of cold baths. Operations on the cortex are to be considered in a certain proportion of cases of partial or traumatic epilepsy, but in no case in which the symptoms have existed over two years. The direct treatment of epilepsy includes the administration of bromides. Strychnin is of value. Dr. Bowman regards beta-naphthol as the best of the intestinal antiseptics. He states that salol may be used for many months and has a tendency to prevent the bad effects of the bromides.

Original Articles.

THEORY OF THE ACTION OF INORGANIC SUBSTANCES.

By J. W. WAINWRIGHT, M. D.

of New York.

In regard to the action of inorganic substances a certain regularity is easily recognizable within certain series. As far back as 1839 Blake showed that the action of solutions of various sorts, introduced into the blood, depends solely upon the electro-positive element; and that the acids of the salts stand in only slight or no connection with this action. Later he was able to show that the action of the metals of the same isomorphous group is in relation to the atomic weight. The greater the atomic weight within the isomorphous group, the more intense the physiological action. The monatomic metals, Li, Na, Rb, Tl, Cs, and Ag agree exactly in their physiological action. The diatomic metals Mg, Te, Mn, Co, Ni, Cu, Zn, Co, have likewise a similar action, and this is also true of the group Ca, Sr, Ba. In the salts of the magnesium series, an analogous physiological action is clearly shown. It is readily observed that the activity increases with the increase in the atomic weight, as also appears in the calcium group. The tetratomic elements thorium, palladium, platinum, osmium and gold all exhibit the same great intensity in their physiological action. According to the investigations of Blake; the three halogens Cl, Br and I are alike in their physiological action, though the increase in intensity is inversely as the atomic weight; for it is well known that HCl acts more energetically than HBr, this in turn than HI. According to Blake phosphorus and antimony introduced into the circulation, cause no notable physiological action at the outset. There is also a law of isomorphism in the case of sulphur and selenium, the latter being the stronger. The unique exception to the Blake law of the analogous action of isomorphous substances is that of the salts of potassium and ammonium; for these differ strongly in action from the other members of the isomorphous group. These elements also form an exception to the rule discovered by Mitscherlich, that the elements of the same isomorphous groups show similar spectra. Blake assumes that the physiological action of the elements depends upon intramolecular vibrations or changes which also express themselves in the spectra.

Two isomorphous groups, viz: the alkaline metals and the phosphorus, have in toto—aside from the simplicity of their spectra—the quality of affecting peripheral and not cerebrospinal nerve centers (Blake). Nitrogen on the other hand, with its very complicated spectrum acts very decidedly upon the latter.

The action of univalent elements upon the lung capillaries (which contract under injection) is, according to Blake, so specific, that the action of these elements when injected into the arteries is fatal. They circulate through the nerve centers in a concentrated condition, just as in the lungs, and

also pass through the capillaries of the systemic circulation without perceptible physiological action.

The salts of all bivalent elements pass through the lung capillaries without causing contraction, but soon put an end to the heart's action. Injected in smaller quantities, the physiological action of the Mg and Ba groups is quite different. The first acts directly upon the vomiting-centre, or perhaps through reflex action upon the splanchnics; while the salts of the Ba group act upon the cord, causing contractions of the voluntary muscles even several minutes after death.

The salts of the trivalent and quadrivalent bases act principally upon the inhibitory and vasomotor centres in the medulla. The action generated is determined by the electro-positive condition of the salt, and changes but little with the nature of the acid connected therewith. Introduced directly into the blood, the sulfate, nitrite, chlorid, acetate, arseniate and phosphate of the same base, exert the same action according to Blake, (but this is not quite the case, says Fränkel in his Arzneimittel-Synthese, Berlin, 1901).

The biological action of the inorganic compounds is determined by the isomorphic relations, since all the matter of the same isomorphous group exerts analogous action.

The atomic weight of an element is an important factor also in the biological action, and influences the general character of the same, which depends upon the isomorphic relations of the group. In substances of the same isomorphous group the intensity of the action is proportional to the atomic weight; or in other words, the higher the atomic weight of the element, so much less must be present to show the peculiar biological action of the isomorphous group to which the same belongs. This rule, however, finds its application only in the electro-positive elements. In the metalloids and halogens the biological action is determined by the isomorphic relations, although there is no apparent connection between the atomic weight and the intensity of the action.

There exists, then, according to Blake's investigations, a connection between the molecular constitution of inorganic substances and their action; since the valence of an element is a determining factor for the biological action. It is not the general character or intensity of the biological action, but an extension, so to speak, of the same, wherein the valence of the elements is of influence. With the number of valences, the number of the organs increases which is acted upon by inorganic compounds.

The Mg group acts upon the nerves of the intestines the Ba group upon the voluntary muscles.

The influence of the isomorphous relations of an element shows itself as the determining factor for the action upon living matter to the best advantage in those very elements which form transition-members between two isomorphous groups. They engender biological actions which are closely allied to those of the elements of both approximating groups. Potassium and ammonium for example, which stand in isomorphous relations with both the univalent metals and the barium group, are distinguished by their action upon the pulmonary capillaries, as do the salts of the sodium group; while simultaneously the most characteristic action of the Ba group is also represented, in the voluntary muscles which are made to contract several minutes after death. When the same element goes into combinations which belong to two isomorphous groups, the action of the salts which belong to the different groups is nowise the same. The difference between the biologic action of the ferrous and ferric salts is very distinct. Ferrous salts do not affect the pulmonary capillaries, while ferric salts cause their contraction. The former arrest the activity of the heart, while the latter increase and strengthen it. The action of the ferric salts upon the nerve centers is very definite, while the ferrous salts are almost without effect here. The ferrous salts delay or prevent the coagulation of the blood, while the ferric salts favor it. The same quantity of ferric salt is 30 times more poisonous than the ferrous salt.

In regard to the influence of the electro-negative constituent upon the biological action, it forms a correlative to the rule that isomorphous substances give occasion to similar biological activities. Most combinations of the electro-negative elements have no distinct biological action. Phosphorus and arsenic can be injected into the blood in much larger quantities than can metal-salts without producing any direct action upon the nervous centres. The fact that the pyrophosphatic alkalies are much more poisonous than the phosphatic is doubtless caused by dissociation in dilute watery solution, the uncombined alkalin base acting much more strongly than the salts.

The influence of the valence upon the biologic action is only secondary, like that of the molecular weight. It appears to determine no more than the direction in which it is expressed. Elements of the same valence may occur in various isomorphous groups, and are differentiated by very different biological actions determined by their isomorphous relations; but no univalent element acts upon so many nerve-centres and organs as does a bivalent element and so progressively with regard to trivalent and quadrivalent elements.

Only in electro-positive elements are valence and atomic weight determinative for the biological action.

An analogy for the above is found in the organic combinations. Schmiedeberg found that the biological action of the ester was not influenced by the electro-negative component.

One is jutified in the supposition that if the spectra in a group of elements are homologous, the biologic action is the same.

As already mentioned above, the biological action of the elements has but two exceptions (potassium and nitrogen combinations), for here the biologic behavior does not conform to the isomorphous relations. This same disparity is revealed by the spectra. In these elements the spectra differ from those of the other members of the same group. We know too little about the absorption spectra of the compounds of the univalent metals, to attribute much weight to this exceptional position of potassium. The spectra of nitrogen and its combinations, however, are very unlike those of other elements. Nitro-

gen not only differs entirely from other elements in this respect, but the influence of its combinations upon the absorption of light shows that optically it is a very active element, but that this optical activity is not accompanied by a distinctly pronounced biological activity.

These interesting investigations of Blake's have spurred on a series in this field both to add to and to criticise his findings. First Bouchardat showed that the physiological action of the chlorides, bromides and iodides stood in near relation to their atomic weight; the action becoming weaker as the latter increased. Rabuteau was able to confirm this rule in connection with univalent metalloids. On the other hand, the physiological action of the bivalent metalloids was said to increase directly with the weights. Selenium acted more powerfully than sulphur, but fluorin was stronger than chlorin. He extended the law to the metals, but was obliged to restrict it. A few interesting investigations should be mentioned in this connection. Thus Richet found that the physiological action of the salts of lithium, potassium and rubidium exerted their toxicity in the proportion of 0.1; 0.5; 1.0. To calculate the lethal dose of an alkali metal the atomic weight should be multiplied by 0.0128.

Richet explained the behavior of alkali metals in the organism by the supposition that they displace and replace, atom by atom, the sodium of the organism. Binet, who made comparative physiological studies of the alkalies and earths, found that their most common action is to cause loss of excitability of the central nervous system, with disturbance of muscular contractility, the latter preceded by disturbances of respiration and cardiac activity, which are able to destroy life in the warm-blooded animals even before the nervous disturbances appear. At times, disturbances of the digestive tract have been noted from Ba and Li. In addition to these general manifestations special actions have also been noted, which are characteristic of groups of metals. The alkalies cause cardiac arrest in diastole, and motor activity through general relaxation of the muscles. The alkaline earths, on the other hand, arrest the heart in systole. Barium is characterized by contraction, calcium by its action on the central nervous system, —a state of torpor with retention of the reflex excitability and sensibility. Magnesium approximates to the first group, since it causes the arrest of the heart in diastole; but it is disinguished from this group by the early paralysis of the peripheral nervous system. From the toxic action upon the frog the following series of metals may be arranged: Lithium, potassium, barium—then come the much less poisonous calcium, magnesium, strontium, the latter but slightly toxic. Finally comes sodium, which is hardly poisonous at all, probably because the organism is habituated to its use from the saline media in which the ancestors of the animal kingdom formerly existed (Bunge). In mammals, barium is most poisonous to the heart and respiration. Binet, however, missed the relation cited by Rabuteau between the toxicity and atomic weight of metals.

If Sr. is taken as 12 the following are the lethal doses according to Binet:

Fatal Dose	Atomic Weight	Toxicity
Na (Sodium)	23.05	0
Sr. (Strontium)	87.6	1
Mg (Magnesium)	24.36	2.5
Ca (Calcium)	40.0	3
Ba (Barium)	137.4	5
K Potassium)	39.15	7
Li (Lithium)	7.03	10

Richet added salts of metals to water containing fish. A relationship between toxicity of the metals and their atomic weight was not noted. Nitrates were found to be more poisonous than chlorides.

According to Richet the limit of toxicity in allowing substances to drop upon the heart of the frog is not dependent upon the atomic weight, while metallic chlorides act differently upon frogs' hearts and fishes' gills. Likewise in the alkali metals the lethal minimal dose is not in relation to the atomic weight.

Richet thought that the more soluble a substance the greater its toxicity; this he accounted for by the fact of the incapacity of the less soluble solutions to diffuse through the protoplasm. This explanation is applicable only to substances of similar composition and to lotions of the same strength. Very readily soluble substances are absorbed much more readily, and under ordinary circumstances produce a more extensive effect, because a larger amount of the substance affects the cell in a unit of time. Blake and Rabuteau criticised the method applied by Richet, and continued to maintain their declaration as to the connection between toxicity and atomic weight.

According to Blake the toxicity increases with the atomic weight in isomorphous groups only, and not as Rabuteau claimed, in general, with the exception of sodium and rubidium. Blake arranged the metals according to their toxicity as follows: Gold, iron oxid (ferric), aluminum, didymium, glucinium, palladium, lanthanum, silver, thorium, platinum, barium, cadmium, lead, rubidium, copper, cobalt, nickel, zinc, iron oxid (ferrous) strontium, calcium, magnesium, lithium.

After further investigations Blake arranged the elements in isomorphous series, according to atomic weight and toxicity. This arrangement shows that the toxicity increases with the atomic weight only within isomorphous groups, and not as a general rule.

Blake's groups are as follows:

	Atomic Weight	Lethal Dose per kilo.
Lithium	7.03	1.2
Rubidium	85.4	0.12
Cesium	133.0	0.12
Silver	107.93	0.028
Gold	197.2	0.003
Glucinium	14.	0.023
Aluminum	27.1	0.007
Iron (Fe_2O_3)	56.0	0.004
Yttrium	89.0	0.004
Cerium (Ce_2O)	140.0	0.005
Magnesium	24.36	0.97
Iron (Fe O)	56.0	0.32
Nickel	58.7	0.18
Cobalt	59.0	0.17
Copper	63.6	0.17
Zinc	65.4	0.18
Cadmium	111.3	0.085

Calcium	40.0	0.50
Strontium	87.6	0.38
Barium	137.4	0.08
Cerium	140.0	0.062
Thorium	232.5	0.034
Lanthanum	138.0	0.025
Didymium	147.0	0.017
Palladium	106.0	0.008
Platinum	194.08	0.027
Lead	206.09	0.110

Lead which cannot be made to enter any group, is relatively but slightly poisonous; the lethal dose amounts to but 0.11 per kilo. Moreover Blake makes the striking statement that metals injected in insoluble form act in the same manner as when in solution by what he terms catalytic action. United with metalloids the toxicity does not increase with the atomic weight, as it does in the case of metals of the same isomorphous group. Blake fixes the toxic dose of phosphoric acid, arsenic acid and tartarized antimony as 0.7, for arsenous acid as 0.3 per kilo. Selenic acid is more active than sulphuric acid. In comparing the halogens, the hydracids and oxacids of Cl were the most poisonous, those of iodin least so.

Botkins' investigations into the action of the alkali metals were directed to showing a connection between toxic action and the periodical system of Mendelejeff. According to the latter we assume that the qualities of elements, as well as the form and qualities of their compounds are represented as functions of the atomic weights. The alkali metals which form the first group are divided into two sub-groups, viz: Lithium 7, potassium 39, rubidium 85 and cesium 133. The second sub-group contains only sodium, 23. Hence despite its resemblance to potassium, sodium is arranged in another group, while all the others belong to one sub-group. Our knowledge of the physiological action of potassium and sodium fully justifies such a separation. As is well known, sodium introduced into the blood is almost harmless even in large quantities; while potassium is a strong cardiac poison. Lithium salts also exert a definite action upon the heart, which is arrested in diastole. It is true that the influence of these salts upon warm-blooded animals is very much weaker, although lithium is a strong poison to the frog's heart.

Rubidium and cesium have, like potassium, a specific action upon the heart. If we compare potassium, rubidium and cesium, we find that the former has the greatest toxicity, and cesium the weakest; while rubidium stands between the others, but inclining most towards potassium. Thus the toxic action *diminishes* with the increase in the atomic weight. Lithium, despite its low atomic weight, is less toxic than cesium, and hence seems to form an exception. But this exception is only apparent for Li, Be, B and others of the lightest metals which represent groups I, II, III, IV, etc., form a class by themselves, having only the salient features of the groups they represent, and being otherwise essentially unlike the rest of the group in some respects. Hence it ought not to surprise us if the physiological action of lithium should differ from that of the rest of the group, despite certain resemblances.

The periodic system of Mendelejeff, according to which sodium forms a particular sub-group, while lithium, the lightest member, forms a special class with the corresponding members of other groups, also holds good to a certain extent for the alkali-metals of the first group.

Chlorid of cesium and rubidium combinations raise the blood pressure when injected into the blood by slowing the heart-beat. According to Botkin the influence of rubidium upon the activity of the heart is a subordinate one. In the case if cesium it is still more insignificant; and in general the salts of cesium and rubidium stand close to the alkalies in physiological relations.

According to Lanfenauer there is a notable relationship between the atomic weight of the metallic bromides and the positivity, in regard to the anti-epileptic action; the latter increases with the increase in atomic weight and positivity, so that the heavy cesium and rubidium bromides have a more marked anti-epileptic action than bromides of sodium and potassium.

Laborde calls attention to the complete harmlessness of the strontium salts, emphasizing the marked toxicity of the similar barium compounds and the weak toxicity of the potassium salts.

In the case of nickel and cobalt the physiological action stands in relation with the physical qualities, although no direct proportion exists between action and atomic weight.

Athanasin and Langlois showed that cadmium salts are almost twice as poisonous as zinc-salts. They diminish the frequency of the heart and its systolic power, and prolong the pauses to the space of 12 seconds. In warm-blooded animals the pressure sinks to 20 or 30 mm. of mercury. Respiratory movements are slowed, and the cadmium salts split up the hemoglobin into hematin and globulin. In the higher animals cadmium acts more weakly than zinc, weight for weight, but is the more poisonous from the standpoint of the atomic weight.

According to Rabuteau, gallium, which from its chemical qualities stands between zinc and aluminum, exerts a toxic action in its saline combinations which especially affects the muscles and is somewhat stronger that that of zinc (gallium 69.82; zinc 65.02).

According to the studies of Kobert uranium is a notable metallic poison, causing gastro-enteritis, nephritis and severe paralyses. It further causes marked ecchymoses in the organs, and produces notable alterations in the vascular walls. Consumption of oxygen is retarded and extensive disturbances of nutrition result. It is certain that uranium in subcutaneous or intravenous injection of its salts, surpasses all other elements in toxicity; while gold and wolfram, which are very near to uranium in atomic weight, are considerably less active. Wolfram is poisonous, but cannot be absorbed through uninjured mucous membrane. The pheno-

mena of intoxication due to wolfram are the same as those of the heavy metals.

These facts are accounted for neither by Blake nor by Botkin.

Although the studies of Blake and his critics are in no wise adapted to determine a clear relation between the physical function of the elements and their behavior in the animal body, they are nevertheless to be designated as very valuable acquisitions by reason of the comprehensive view of the subject which they permit; as well as of the notable and (so to speak) unexpected relationships which have come to light. This was the first bridge between physical chemistry and pharmacology. The fact that we do not as yet understand all the exceptions to the laws may well depend in part upon our insufficient comprehension of the chemical relations of the elements to one another.

That position and grouping play a prominent part in the inorganic as well as the organic combinations, so that while one substance is poisonous, another analogous compound is inert, has been shown in the joint work of Larmuth, Gamgee and Priestley.

The poisonous action of the same amount of vanadium is of different degree according as the combination introduced into the body is an ortho-, meta- or pyro-salt. The compounds of pyrovanadic acid are the more toxic, while the orthovanadates are the least poisonous. The corresponding phosphoric acids behave in the same way. As is well known, the orthophosphates are non-poisonous, while the meta and pyro-phosphates, especially the latter, have a pronounced poisonous action when introduced subcutaneously or by intravenous injection , like that of the analogous vanadium compounds. Pyrophosphate of sodium has no action when given by the stomach, perhaps because of rapid elimination. The assumption of a transition into orthophosphate cannot explain this behavior, for the ferments of the saliva, gastric juice and pancreas are alike unable to effect such a transformation.

The position of a metal in an organic group is also of great importance in regard to the preservation of the action of the metal.

According to Woehler, ferrocyanid of sodium is nearly eliminated entire, and does not act like an iron salt. Platinocyanid of sodium is likewise almost free from toxic action, deviating in this regard from the very poisonous platinum salts; it is also eliminated unchanged. The organism is unable to decompose the metal from its combinations and bring it to action, hence these substances are inert as metal poisons, and further have no hydrocyanic acid action for the same reason, leaving the body unchanged.

The stibonium and arsonium compounds do not show the action of the combinations of antimony and arsenic; similarly the phosphonium compounds do not exert any phosphorus action.

The action of methyl triethyl stibonium iodid, the tetraethyl arsonium iodid and the tetraethyl phosphonium iodid resembles that of the substituted ammonium salts and of curarin(paralysis of the peripheral ends of the motor nerves). Hence in these combinations we do not see the special action of the metalloid, poisons, but instead an action like that of the indifferent nitrogen.

We have no general view as to how the inorganic substances produce their action in the body. Observations hold good only for individual groups.

Thus Binz and Schultz show that combinations of N. P. As. Sb. Bi and V. act upon the cells through energetic increase in the oxygen transformation; so that even with the exception of the tribasic phosphates there are higher and lower steps in the oxidation. According to Schultz the living cells are more strongly influenced by such poisons as have a reducing action, because these take up the atoms of oxygen. Hence arsenous acid is more toxic than arsenic acid. The reduction, which plays the chief role, is supported by the oxidation and the chemical behavior of the oxidation products.

Phosphorus, nitrous and arsenous acids are all strongly poisonous when introduced within the body (this does not hold good for phosphorous acid which is inert). They take up the O atoms and during the process act as intense poisons, and are transformed into fully oxidized acids. Arsenous acid then has a powerful reducing action upon the tissues and is oxidized to arsenic acid; the latter in turn is reduced to arsenous acid by the reducing action of the tissues. The toxicity of arsenous acid and of phosphorus rests then upon the withdrawal of O from the tissues, the product of oxidation again undergoing reduction into the original toxic substance.

TENT LIFE AND SIMPLICITY IN THERAPEUTICS AS FACTORS IN THE TREATMENT OF PHTHISIS PULMONALIS.*

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At the British Congress on Tuberculosis held at London during the past summer nothing very new was offered in the treatment of phthisis pulmonalis, yet much was done to stimulate interest in simplicity as a factor in therapeutics in the treatment of the early stages of this disease. This is of vast importance. Many new tuberculosis sanitaria have been established on the outskirts of many of the large cities in the civilized world; and, in some parts of the country interest has been directed to the placing of tubercular invalids of public institutions in tents, thus securing the most favorable conditions for patients, as well as the prevention of infection of others.

The city of Denver is a great health resort, and the question as to where to send the huge influx of invalids and how to handle them to their best advantage, involves a serious problem to the residents of the city. Formerly, there was little difficulty in placing them on ranches, but in the last few years a great dread has been inculcated in the minds of boarding-house and innkeepers, so that now it is almost impossible for the invalid to secure a home

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in the country where good food and necessary attention can be obtained. Such difficulties confronting the unfortunate seeker for health, suggested to the author the necessity for immediate relief, and thus the Tent Colony was established.

About two years ago the author determined to put into practical application the theory of the open air treatment of consumption and to observe the results. Before giving any details or reports I will dwell upon the selection of suitable locations for colonies and reasons for their choice. The plains were selected in preference to the mountains. This decision was arrived at partly from personal observations, as well as the concensus of opinion of our leading pulmonary specialists. The temperature in the mountains is quite variable during the day, and the nights are often cold, damp and foggy. On the prairie, on the contrary, the temperature and other meteorological conditions are more uniform, the nights being comparatively cool and refreshing. The percentage of humidity is much lower than on the range.

The Colony in which we are interested is situated thirty miles east of Denver, directly on the plains. The trees are large and give an abundance of shade; the soil is sandy, and the country somewhat undulating, thus favoring rapid evaporation and absorption of moisture. The natural advantages of this location make it especially desirable, as it is situated some distance from the irrigation belt, maintaining freedom from excessive humidity, and a sufficient distance from the city to escape the irritating smoke and gases from the many chimneys. During the last winter we concentrated our tents in a protected spot near the ranch house where they would escape the winds and storms, and yet be close enough to have access to the main dining-room. The tents were arranged around the central building connected by canvas vestibules. A large coal stove in the center of the house granted the occupants facilities for dressing and sitting room. The beds were warmed with hot-water bottles, blankets were used instead of sheets, pajamas made of heavy flannel with feet and hood. With this costume, bed-room slippers, and blankets over their shoulders, there was no danger whatever in going through the vestibule to a previously warmed bed. After the weather settled, the patients lived entirely in their tents, so separated that the occupants would not annoy one another by coughing. The patients are required to use cheese-cloth, cut in small squares, to receive their sputum, this being always burned. The bedding is exposed to the sun daily and individual dishes, etc., are used, insuring to a minimum the danger of infection. The tents have board floors and sides two feet high. They are roomy and comfortable and are so arranged that direct sunlight falls upon the contents by day and that they have perfect ventilation at all times.

It is needless to say that fresh air, appropriate diet and hygiene are the principal elements for the restoration of health. The bill of fare is composed of simple yet nutritious and easily assimilable food, milk, eggs, vegetables and meats, chiefly beef, mutton and bacon. Great care as to the preparation of the diet is insisted upon. The patients receive fresh milk and raw eggs at any time they may desire. They are instructed to spend most of their time exposed to the direct rays of the sun, except in the middle of the day during the very warm months of summer. Much pleasure and benefit is derived from such sun baths in the early morning and late afternoon. During the heated period of the day they may recline in hammocks or settees under the shade trees. In the spring and fall the patients remain out all day, and while they are exposed to the sun some wear dark glasses. The patients are required to make an application of cold water to the neck and chest every morning, after which a vigorous rubbing with coarse salt is indulged in. The change of clothing is carefully regulated according to the changes in the weather. The very ill patients can be carried out on their cots and remain as long under the shade trees as we consider advisable. For the amusement of patients we have accumulated quite a number of volumes of good literature and games. The *ranch* is supplied with a number of horses and carriages for the recreation of the patients when they desire. We are also supplied with a drug tent, where the resident physician in charge dispenses the necessary drugs and also occupies it as a consultation room for the patients of the Colony.

This simple life brings about very happy results. Exposure to the open air, sunshine, and sleeping in tents, develoys an immunity from colds. In fact, the previous conditions of suboxidation are now reversed and a rapid subsidence of the annoying cough takes place. An increase of chest expansion and gradual subsidence of hectic symptoms soon intervenes. Walking, driving, or horseback riding and moderate calisthenics are carefully regulated to prevent over-exertion and exhaustion. The radical change from home life and anxiety to the abandon of tent life on the prairie certainly exerts a soothing influence. The nostalgia resulting from being separated from cherished friends and surroundings is soon replaced by contentment and adaptation to the environment. Such restful life contributes largely to the bodily welfare, hopefulness, and encouragement. The skin loses its pallor and the nails and hair become more vigorous. Pulmonary catarrh and hemorrhages are arrested. The patient loses his sensitiveness, his emotions are modified, he becomes hopeful, and an inspiration to live seems to take hold of him. His energies go to nutrition, and his mind is at rest. All his desires are concentrated in tissue building. He falls asleep at twilight and awakens at sunrise hungry for breakfast. This is the word picture, of course, of cases in which there is a possibility for arrestment of the disease.

The progress of the Colony for the last two years has been eminently satisfactory. The work has developed step by step until at this writing we are assured of an encouraging future. Considering the inconveniences, and lack of experience in handling a permanent camp, we have worked under many disadvantages. The growth has been steady and uninterrupted until now we have a small village of tents. As new patients present themselves, we have endeavored to make more suitable accommodations.

The Colony is somewhat too remote from Denver for the convenience of physicians who desire to retain the management of their cases. We have now in view a location equally salubrious, much nearer to the city, and we hope to make this change very soon. Last winter our ideas of tent life received a crucial test. During the exceptionally cold weather our patients slept in tents and suffered no discomfort. The principal aim of this tent colony treatment for tuberculosis, which can only be outlined here, is to improve the patient's nutrition and increase phagocytosis by placing him in the most *natural environment* obtainable. Climate, open air, sunshine, rest and a careful regulation with the necessary therapeutics are the essential aids to a reconstructive metamorphosis. I have used, comparatively speaking, very few drugs. Cod liver oil, guiacol carbonate and creosote have not been administered since the opening of the Colony, and the results obtained from other than such medication have fully justified their omission. The rule most frequently urged is that the patient shall maintain absolute rest while in the active stage of the disease. It is much better to err on the side of over-caution in prescribing exercise to such patients. I feel confident that many lives are constantly jeopardized if not sacrificed through a general misconception which exists among the laity, and, it is to be regretted, to a great extent with the medical profession, in regard to active or even mild exercise in this disease. A patient will be injuriously affected in direct proportion to the amount of over-exercise he is allowed to take if any retrograde action is going on. Frequently an arrested case can be rekindled in a single act of over-exertion or other indiscretion.

The expression is quite common, such as, "Well, you go to the country for a while and rough it, or go out on a ranch. Keep away from the doctors and take no medicine." Such remarks were often overheard by the author from the lips of injudicious physicians. The fallacy of such advice is readily seen. The patient being now released from the restraint, which had been placed upon him by his physician, will now indulge in pursuits and excesses which may result in serious complications.

We much prefer the cases which are still in the primary stage, as their chances for permanent recovery are much better. However, we have not imposed any strict rule in the acceptance of patients, as we are encouraged by the number of happy results in some desparate cases. Moribund cases, of course, are undesirable.

I shall not burden you with a recital of a long list of cases or statistics, but let it suffice for me to report a few illustrative cases typical of what I have found at the sanitarium.

CASE 1.—W. T., male, white, 32. Street car conductor. Sick for six weeks. Consolidation in left upper and some dulness in the right lower lobe. Hemorrhages once and sometimes twice a day for four months before leaving for the colony.

When examined at the Colony, pulse 120, respiration 25 to 30. Temperature 102°; constant cough, profuse expectoration, emaciation. Sputum contained tubercle bacilli.

Treatment: Absolute rest for ten days, in tent, alternately under trees and in sunlight for three weeks. The hemorrhages ceased after the first week; he has been with us 16 weeks. Pulse varying from 80 to 90; temperature normal, cough reduced to a slight morning attack. There has been a gradual and steady improvement of all symptoms since admission. Chest expansion has increased 1½ inches, gain in weight 17 lbs. Percussion reveals resonance over both lungs. Moist and bubbling rales have disappeared. He is now able to perform ordinary labor.

This patient received no medicine whatever.

CASE 2.—R. H., Female, 25, single. Had pneumonia in February, 1900; entire consolidation of left lung when brought to the Colony. Microscope revealed tubercle bacillus.

Temperature from 10 A. M. to 1 P. M., daily, varied from 102° to 103½°. Cough was constant, profuse expectoration; stomach unable to retain food and the patient was extremely exhausted. Respiration 35 to 40, pulse 120 to 130. This patient was carried from the tent to the grove every day, remaining in the open air all the time. Nourishment was given the patient while she was in the reclining posture and with the least possible exertion on her part. At one time only did we consider it necessary to give a sedative for cough. Turpentine stupes were applied to the chest. Four weeks elapsed before a noticeable change took place, then the range of temperature began to shorten both in duration and height, reaching 101° to 101½°. With this the cough became less troublesome. She was able to retain and take more food, and from this time progress toward recovery was noted. Patient sleeps well, appetite good, respiration 18 to 20, pulse 80 to 90, she has gained weight and strength, and is able to walk from the tent to shade trees. The lung cleared up very satisfactorily. The disease is now practically arrested.

CASE 3.—E. C., 25, female. Duration of illness before entering the institution four months. When seen last November there was consolidation at left apex. Sputum contained tubercle bacillus.

This patient seemed to enjoy this out-of-door life from the beginning. She entered into it with a bright, cheerful disposition and a determination to get well. She followed directions strictly and there was a rapid change for the better after the first week. After five weeks there was almost total absence of expectoration and cough, 1¾ inches increase in expansion and a gain of 18 lbs. in weight. Temperature, pulse and respiration are about normal at this time. She is now able to do ordinary housework. At night this patient slept all last winter in a tent; she suffered no relapses and she enjoyed the cold weather, and her improvement continued uninterruptedly.

CASE 4.—A. R., female, single. Pneumonia five months before admission. Multiple cavities in both lungs. Respiration 30 to 40, pulse 130, temperature 102° to 104°, anemic, weak, and unable to retain food. The treatment was essentially the same as in the other cases. There was slight improvement for several months; later she was able to retain food and take a moderate amount of exercise. Respiration and pulse approached more nearly to the normal, diminution in amount of sputum and cough. One day during her menstrual period she over-exerted herself, having been repeatedly cautioned against so doing. She had to remain in bed and all of the former symptoms returned, and within ten days she became seriously ill. Just at this time there was a very cold spell, during which the thermometer registered 20° below zero for several days, and, much to our surprise, she began to improve to such a degree that by the time the weather had settled she was again able to retain food, sit up for a time each day, and within a week could take her meals in the cabin.

Her strength continued to increase. During each cold period we noticed a marked change for the better. In March of this year we had several weeks of warm, humid, disagreeable weather. This seemed to bring back all the old symptoms with renewed force, and not having strength for another battle against the disease, and being much discouraged, was lost. This is the only fatal case we have had thus far. Her one indiscretion in over-exertion told on her both physically and mentally.

The above reports have been selected from about forty cases, in which we kept clinical charts, and improvement was found in every patient where they were willing to conform to our rules. We always

discourage discussions or comparing of notes between patients. We keep them separated as much as possible, to avoid annoying each other by coughing.

During the summer the separation of the tents allowed natural selection of companions, thus overcoming the irritation of undesirable companions thrust upon one. The winter arrangements have necessitated closer quarters, but we shall shortly overcome this feature.

Some of the tents have small coal stoves, and if isolation is desired, stoves can be placed in the individual tents. Some patients prefer to sleep in tents without artificial heat.

The influence of out-door life on the febrile movements, as compared with the ordinary treatment at this time, is brought about by the fact that a maximum measure of oxygenation and rapid gas interchange takes place, thus not only improving the hemoglobin, but stimulating the secretory and excretory functions.

Too much attention cannot be given to the anemic, ill-nourished patient, who presents himself with a slight hacking cough. It is only within recent years that the symptoms of the so-called pretubercular stage have been studied. We should not fail to study most suspiciously this very early stage; although we do not see the cases so early, we should at least discover the existence of the clinical picture of beginning tubercular processes. The treatment should not be complicated by the exhibition of a great variety of drugs. The frequent changes in the therapeutics create a feeling of doubt and hesitancy in the patient, this being a great drawback to the favorable progress of the case.

The fact that such an enormous list of alleged specifics already fills our therapeutic armamentarium, as well as the steady addition of more and more medicines for the cure of consumption, must prove conclusively that the ideal drug has not as yet been discovered. A review of the list of drugs which have been lauded most highly, and their failure to accomplish what has been promised by paid medical magazine writers or pamphlet circulars of large drug houses, has shaken our faith in such alleged specifics, many of these drugs being highly irritating to the mucosa of the stomach and intestinal tract, interfering with appetite and assimilation of food, thus defeating constructive metamorphosis, the vital element in the treatment of this disease. Polypharmacy, or the incorporation in one prescription of many drugs to modify all accessory or minor symptoms, should be guarded against, as the latter usually subsides when the chief cause is understood and successfully combated. The harmfulness of polypharmacy in this disease may be summed up in one word—incompatibility, which is subdivided into three distinct divisions:

(a) Pharmaceutical,
(b) Chemical,
(c) Therapeutic.

(a) Pharmaceutical. Nauseating and unpalatable drugs.

(b) Chemical. Obscure chemical reaction, forming a new compound, which may be inert, if not harmful.

(c). Therapeutic. A component part of the prescription may be intended either to exalt or to depress function. This feature will be continued after it has performed its desired work, whilst the other ingredients are supposed to be doing their duty.

What are, after all, the fundamental principles which should govern the treatment of phthisis pulmonalis?

The establishment of reconstructive metamorphosis, the greatest antagonist of the bacillus tuberculosis, and this can be accomplished by—

1. Complete and rapid exchange of the gases, oxygen (fresh air) and Co 2;
2. Involuntary respiratory gymnastics, viz., moderate altitude;
3. Personal hygiene;
4. Easily assimilable food, giving largest percentage of nutrition;
5. Mental and physical rest, with a campatible and well-regulated measure of exercise;
6. Such few drugs as may stimulate the weakened digestive and circulatory functions;
7. Incidental drugs to regulate excretions and secretions, as the case may require from time to time;
8. Abstinence from drugs alleged to be specifics, etc.;
9. A life of freedom in the open air, such as described above and carried on at a tent sanitarium.

The writer's experience has convinced him that this is a common-sense method. Reports from good observers in various parts of the world seem to prove that the simple methods, such as set forth herein, have been rewarded by very happy and encouraging results. It would appear that entirely too much attention is expended upon the so-called specifics at the expense of the study and application of psychologic and physiologic therapeutics. This method of out-door life in the country, away from large cities, has always demonstrated its value as a reconstructive measure, and statistics prove that the mortality has been very materially lessened. Furthermore, it has been forcibly proved that marked improvement may be accomplished, irrespective of altitude and meteorological or other climatological conditions. If this is true of the lowlands and seaboard, we should certainly derive the maximum degree of benefit from out-door life in a country like Colorado, with its moderate altitude and low percentage of humidity, with its bracing atmosphere and all the other conditions which together offer the ideal place for the consumptive.

THE EFFECT OF NITROGLYCERINE IN VASCULAR DISTURBANCES OF SOME FUNCTIONS OF THE BRAIN, WITH REPORTS OF TWO CASES.*

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The very well-known physiological truth, namely, that the nutrition of a tissue is greatly influenced by the state of distention of its blood-vessels, applies also to the nutrition of the tissue of the brain. Although the question concerning the exact mechan-

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ism of regulation of the cerebral body-supply is not yet settled, in spite of the accumulated clinical as well as experimental facts, it is nevertheless accepted that the following factors play an important rôle, viz., the general venous pressure, general arterial pressure, and the state of pressure of the cerebro-spinal fluid. When, however, ordinary physiological conditions are exceeded, the influence of the sympathetic system upon vasodilatation and vasoconstriction must be added to the factors just mentioned.

The experimental studies of Bayliss and Hill point to venous pressure as the most important element in the regulation of intracranial pressure, and the opinion of the majority is that the normal pressure of the cerebro-spinal fluid varies also with the changes in the general venous pressure, to which it endeavors to conform. Venous congestion is always accompanied by a corresponding arterial anemia, but which of these phenomena is the subordinate one, we know not. With regard to sleep, for example, all the experimental evidences are in favor of the fact that it is accompanied by an intracranial arterial anemia, with arterial tension and venous congestion. Similar observations were made in mental depression. On the other hand, psychical activity is accompanied by an arterial hyperemia. The therapeutic application of this principle is of the highest importance, and the following two cases prove it conclusively:

CASE 1.—O'N., aged fifty-seven years, a prominent manufacturer of this city, was last year under my care for a typical meralgia paresthetica, from which he had been suffering for the last three years. For a number of years he indulged in alcoholic beverages to a great extent; every now and then he would become intoxicated. He nevertheless led a very active life, and worked very hard, mentally and physically. At examination we found him to be of a very mild and gentle disposition, like we often see in chronic alcoholic patients; face flushed, and nose enlarged, red, with the characteristic acne rosacea. The eyes were watery and the conjunctiva hyperemic and yellowish. The peripheral arteries were found with high tension, but very slight hardening of their walls as far as the touch could elicit. The pulse wave was slow in its ascent. The venous circulation seemed to suffer; generalized varicose veins on the lower as well as on the upper extremities and face. Patient tells me that at times the veins become still larger, and this was almost inevitable after a great mental strain. The heart revealed a very weak first sound at the apex, but no murmur, and an accentuated second sound in the right second intercostal space near the sternum. The urinary analysis showed a specific gravity of 1035, but no albumin and no sugar. The microscope discovered a few epithelial cells. The other viscera were normal. The patient's mental condition presented nothing unusual, except a marked impairment of the memory, which I had the opportunity to verify on several occasions. The affected memory became particularly noticeable toward the end of his treatment for the meralgia paresthetica, *i. e.*, about four months later. The treatment consisted of galvanism and the administration of potassium iodide in addition to general hygienic and dietetic rules, which he followed as strictly as his occupation permitted. Although alcohol was absolutely forbidden, he nevertheless indulged in it, but on rare occasions. The pain was considerably allayed, and his general health improved to a great extent. Then I noticed that his memory became weaker, and a slight dyspnea developed on going up-stairs. At about the same time he complained, also, of attacks of narcolepsy. While at his work, all of a sudden he would feel a great desire for sleep. This would happen several times during the day, but only for about fifteen minutes each time.

A repeated examination of the heart and the peripheral circulation revealed nothing new; the same condition as when he came to see me first. One morning I was called in haste, to see him, and these are the circumstances related to me by his family. About two o'clock in the morning they heard him making a noise. They found him in another room dressing himself. Asked why he was dressing, he answered in such an unintelligible manner that he could not be understood. He kept on dressing, but soon undressed himself, again put on his clothes, and so on. He wandered around the room, picking up articles that could be of no use to him, took out his full dress suit with intention to put it on. This frightened the family. They immediately put him to bed, and at 6 A. M. sent for me. From 2 to 6 he could not speak distinctly, and presented a vague expression. Upon my arrival I found the patient's face cyanotic. The superficial veins were engorged not only on the face, but also on the extremities, the respiration was difficult, a few râles in the lungs, pulse was small, but of very high tension, heart-beats hardly perceptible to the ear, but the second aortic sound, familiar to me by its slight habitual accentuation, now very much accentuated. But the most striking symptom was the mental condition. Almost total aphasia and inability to recognize me, with a vague unintelligible look, associated with a paretic condition of the right arm, were the cerebral symptoms presented by our patient. The lower extremities, as well as the upper left limb, were found normal. The patient urinated as usual, but had not had a stool during the preceding twenty-four hours. No convulsions were present during my visit or at any time during the night. The cyanotic appearance, the dilatation of the superficial veins, the smallness of the radial pulse, with its high tension and the condition of the heart suggested a venous congestion, a disturbance of the intracranial pressure and of the circulation of the brain, especially in the area of its speech center. A depletion of the venous circulation was therefore indicated in order to facilitate the arterial circulation. I immediately gave the patient a hypodermic injection of 1/100 grain of nitroglycerin, ordered a high saline enema and prescribed 1/100 grain of nitroglycerin to be given twice during the day. I also insisted upon exclusive milk diet, that the patient be kept in bed and carefully watched, as he was extremely restless. Until 4 P. M. patient took three doses of nitroglycerin. I then saw him and found a radical change. He recognized me at once, shook hands with me, and could speak, though not very well. The cyanosis was very much diminished. The intelligence was still somewhat obscured. The radial arteries were full and dilated, the heart-beats were more perceptible and the accentuation of the second aortic sound was less marked. Nitroglycerine was discontinued, and the nurse was instructed to watch the patient closely, and in case of a recurrence of the same symptoms immediately to administer nitroglycerin, 1/100 grain, every four hours. The next morning I was told that exactly the same symptoms reappeared during the night: cyanosis, total aphasia, marked impairment of intelligence, but no convulsions; patient urinated sufficiently (three times during the night). Nitroglycerin was given at once, and repeated three hours later. To me the patient appeared comfortable and exactly in the same condition as I left him at 4 P. M. on the previous day. This was undoubtedly due to the nitroglycerin administered during the night. In view of the fact that a recurrence of the symptoms took place when the drug was withdrawn, we kept up its administration during three successive days in spite of the fact that the patient was improving. At no time was there any ill effect from the drug. On the fourth day we discontinued the treatment, but kept him in bed on exclusive milk diet, watched the quantity of urine voided, and kept the bowels open. Urinary examination showed a specific gravity of 1020, no albumin, no sugar. Microscopical examination of the sediment obtained with centrifuge was negative. For four consecutive days patient continued to improve, when again a new attack of aphasia occurred. Nitroglycerin was resumed and the aphasia disappeared. Such was the condition of the patient for four weeks, during which time he would have attacks of aphasia with impairment of intelligence whenever he abandoned the treatment for five or six days. He was allowed to walk around, but was absolutely forbidden to do any work. He carried in his pockets tablets of nitroglycerin (1/100 grain), and at the slightest change in his condition he would take them two

or three times during the day for three days, and his condition would improve. Two months later he returned to his work, but watched himself pretty closely, and as soon as some headache would come on he immediately began to take a few doses of the drug. This would relieve him even from the headache. The attacks of narcolepsy gradually decreased in frequency and duration. He is again in active business, and is at his office every day without exception, but always provided with the tablets. Such was the remarkable effect of nitroglycerin upon the bloodvessels of the brain, as it was certainly a condition of vascular disturbance of the cerebral functions.

CASE 2.—M. P., aged eighty years, came to see me at the beginning of October, 1901, for fainting spells occurring two or three times a day for the last year. He said that they only came on when he is on his feet, but he was free from them when lying down. Each attack is followed by a complete loss of consciousness lasting ten or fifteen minutes, but there were no convulsions and no frothing at the mouth. The attacks never occurred at night. Each attack was always preceded by a sensation of dizziness. For the last several weeks he has had constantly some dizziness, which compels him to have a companion whenever he has to attend to business. Alcoholism was denied by him. At examination, we stated that the patient was cyanotic, the superficial veins of the face were very much distended, breathing was very difficult and harsh. The lungs were distinctly emphysematous; the thorax was increased in the antero-posterior diameter. The inspiratory movements of the chest were short, the expiratory prolonged. Percussion gave increased resonance. On auscultation prolonged expiration, with sibilant rales. Heart: The first sound could not be heard at the apex. The second sound was exaggerated, there was no murmur. The aortic sounds could not be heard at all, on account of the noise in the lungs during breathing. The peripheral arteries presented very marked arteriosclerosis. The pulse was small, but of great tension. The lower extremities presented a normal appearance, no edema. The urinary examination was negative and the daily quantity was normal (about 2½ pints), the specific gravity 1025.

In making the diagnosis, we at once eliminated epilepsy, as the attacks of unconsciousness were not of epileptiform character, and uremia, because the urinary examinations were negative. We thought then of a venous congestion with contracted arteries of the brain and increase of intracranial pressure: At once we administered nitroglycerin in 1/100 grain doses, in addition to general dietetic rules appropriate in such a case. The patient reported on the third day remarkably improved. There was no cyanosis, he looked bright, and the difficulty in breathing was considerably lessened. There was no tension of the peripheral arteries, the pulse was full and regular, and the pulmonary râles were considerably diminished. The patient was advised to live on an exclusive milk diet for a few days longer, to move his bowels daily and take potassium iodide in 5-grain doses three times a day in addition to the nitroglycerin. The patient kept on improving. The attacks of unconsciousness disappeared totally, but the sensation of dizziness remained, although considerably diminished. Feeling himself very much improved the patient left me against my advice for about two weeks, but returned for the following reason: The attacks of unconsciousness returned in the same manner as previous to my treatment. I learned that he gave up the nitroglycerin, but continued the potassium iodide. We resumed the treatment: the attacks gradually disappeared, and presently he suffers only from a slight dizziness on exertion. The milk diet is kept up, but not exclusively. The patient takes potassium iodide regularly, but the nitroglycerin he uses only when the dizziness increases. He feels comfortable, but we certainly do not expect to accomplish a permanent cure, on account of the condition of his lungs and the arteriosclerosis. The fact nevertheless remains that nitroglycerin is the remedy from which he can expect some relief and which makes his life endurable.

Although both cases are apparently different in their clinical manifestations, they nevertheless are analoguous in their main features. In either case the brain tissue suffered from evident vascular disturbances. Here and there we witness a sudden functional trouble of the nervous centres, which was manifested in a suspension of their physiological activity. It is a sort of a shock to the nervous tissue, which is characterized by a sudden functional exhaustion, without a permanent material lesion. This is the so-called "nervous apoplexy" of the old writers. Whether it was due to venous congestion or to cerebral anemia, the result was a transient inhibition of the sensory and motor centres. Experimental researches corroborate the truth of these clical observations. The famous experiments of Brown-Séquard and Vulpian, which consisted of ligating the carotid and vertebral arteries or of compressing the carotids gave a similar picture, namely, a sudden inhibition of the cerebral centres caused by a vascular disturbance and change in the intracranial pressure.

There are certain other factors which may act upon the nervous cells in a similar manner, for example, various poisons introduced into the system from outside or elaborated within the system, but the vascular influence is the most potent factor. If the mechanism of the regulation of the cerebral blood-supply depends so much upon the vascular disturbances, we certainly find in nitroglycerin a powerful drug for controlling a functional inhibition of the higher centres depending upon the circulation. It is an agent which should be principally used when a rapid effect upon the vascular apparatus is expected. By promptly dilating the arterioles, the arterial tension becomes lowered, the rapidity of the pulse is increased, the blood-pressure is considerably reduced, and the results thus obtained are quicker than with all other forms of nitrites.

CARSICKNESS; CAUSE AND TREATMENT.

By J. N. RHOADS, M. D.,
of Philadelphia.

I have been very much impressed by the prevailing disease,—or shall I say, symptom—carsickness. Especially have I noticed its frequent occurrence since the introduction of so many rapidly moving cars in the narrow streets of our large cities,—since the introduction of the trolley cars. The steam cars, of course, run just as fast or faster, but do not run for such long distances on narrow walled streets. The steam cars cause the same trouble although not quite so often, owing to the fact that people ride much more frequently in trolley cars.

The type of steam car sickness, however, is more pronounced, more protracted, the victims of steam car sickness often being compelled to remain in bed for two or three days after a journey of from one to five hundred miles. This, of course, is no new thing. Who does not have patients that dread to take long journeys in steam cars, knowing full well that they must suffer during and after it.

In my own family, if nepotism is allowable in medical papers, I have two members who suffer very much from trolley car sickness, and it has been owing to this fact that I have observed the trouble more closely in my patients.

My oldest boy, a strong, robust fellow, not yet nine years old, has been a typical sufferer ever since he left his mother's arms. One of my twins, six years old and per-

fectly healthy, suffers from the same trouble, while her mate, also a girl, equally healthy, has never shown the least evidence of the affection; the affected twin, like her brother, has been a sufferer ever since she was able to sit on the car seat alone, and if our recollections serve us right, she had several attacks before she could walk. Last year my boy began to wear glasses and he has not had an attack since. The little girl has not yet been refracted, and we do not allow her to ride in the cars.

I shall now proceed to describe a few marked cases.

CASE 1.—A well nourished boy, six years old, was brought to me for treatment by his mother, an intelligent woman, after he had had several attacks of vomiting in the trolley and steam cars. She said that her boy could not ride in a rapidly moving trolley car, especially a closed one, for more than five or six squares before he would complain of feeling dizzy, then he would become as pale as death, perspiration would break out upon him, and, if he was not immediately taken out of the car to vomit, he would vomit in it, as he did on more than one occasion, to the mother's discomfort, and to the disgust of the conductor and the rest of the occupants of the car. Indeed, the mother states, to such extent did this continue that the boy hated to see a car, and no amount of bribes, even sugar coated, could induce him to get into a closed trolley car; although he would occasionally try an open one, and so far as his mother remembers never had a vomiting attack in one, though he would complain of dizziness.

Last year his mother wished to take him to the big stores to show him the Christmas displays, which were about sixteen squares from his home. The boy said he would go, if his mother would walk with him, this she did not find time to do, and the boy did not get to see the Christmas displays; a sight so dear to a child's heart. This boy has worn glasses for the last nine months and has not had a single attack of car sickness since he first put them on.

CASE 2.—A single girl, a forelady in a retail millinery store; an exceedingly nervous girl, who suffered more or less continually with a stubborn frontal headache. She also had posterior nasal catarrh, and catarrh of the stomach. She told me that a few minutes after getting into a car, (and this was in horse car times), she would begin to feel nausea coming on, accompanied by a profuse flow of saliva; great beads of perspiration would stand out upon her forehead and she would would have a heavy sick feeling at the pit of her stomach. At this stage she would signal the conductor to stop the car, and she would make a rush for the street to vomit. In one case she actually vomited over the rear dash board of the car. Sometimes, however, by keeping her eyes closed she would be able to fight off an attack of vomiting, and succeed in reaching the end of her journey, but with a very uncomfortable feeling during the ride. I sent this girl to an oculist and she was entirely cured of headache, her indigestion, her car sickness, and her nasal catarrh were very much ameliorated. For many months previously I had poured into her rebellious stomach many remedies without avail. I purposely saw her this week and she tells me that she has never had an attack since she first put on her glasses.

CASE 3.—A maiden lady, fifty-five years of age, has been under my medical observation for the past seventeen years, has been a pronounced sufferer from steam car sickness. She would take about two steam car rides each year. They would be about a hundred miles in length. At the end of one of these rides she was a pitiable sight to see; her skin would be cold and clammy, the conjunctiva would be very much congested, the lids tumefied and closing over the light sensitive eyes. She had often told me that she would have to vomit three or four times while taking such rides. She was a strong minded, robust servant, not given to hysteria. I frequently urged her to have her eyes examined, but she always refused, saying that: "People only wore glasses for style," etc. I wish to add that if she made the same distance in a steamboat she was not troubled in the least with sick stomach or vomiting, and had very little headache. The boat was a steady one and was not on the sea. I sent this patient to an oculist and for the next five years she was free from car sickness and headache, when, owing to the need of having her glasses changed, her car troubles began to make themselves manifest, but upon being refracted, disappeared again.

I should state that all three of the foregoing cases were of the far sighted astigmatic type, I have seen several other cases but of a milder type.

I have purposely avoided ophthalmological detail owing to this being purely a medical meeting.

The cause of car sickness is the rapidly changing images on the retina. The image changing is much more rapid in trolley cars which run rapidly through the narrow walled streets of our large cities.

This can be graphically demonstrated by holding a camera facing the side of the street in a rapidly moving trolley car, and looking into the fender or on the screen, and then taking it upon a steam car, where most of the objects are farther away and, consequently, do not move so rapidly.

When we think of the futile struggle of the ciliary muscle to bring these rapidly moving multiple images to a clear focus, in an abnormal eye, the wonder is, not that we have car sickness, but that we do not have much more of it.

The nausea and vomiting, of course, are reflex, and are produced, as we all know, by irritation of the sympathetic nerve, which has several terminal twigs in the eye.

I have made up my mind that not every case of astigmatism has car sickness, but that every case of car sickness has astigmatism. The gravity of the case does not seem to be governed by the extent of the ocular defect, but rather the reverse is true. Some of the slightest optical defects produce nausea and depression, while some of the most marked cases of astigmatism give little or no trouble. This is due, I think to the bad optical apparatus being unable at any time to get a clear focus, it soon gives up the attempt when the extra rapid changes come, and allows the retina to receive a continual blur, which in turn becomes accustomed to it and does not kick.

What shall we do for our patients who have car sickness. The first and paramount treatment, of course, is the prescribing of properly fitting glasses. Theoretically car sickness must cease as soon as the eye has been brought to normal. Practically it is cured in most cases and greatly relieved in all.

Some prophylactic expedients in car sickness are: First to keep the eyes closed during the entire ride. Second to sit at the end of the car and look out of the front or back windows. Third the wearing of very dark glasses or green shades. Fourth, the best prophylactic in *steam* car sickness is to ride backward in the rear seat of the rear coach.

I would here suggest that some of the extreme cases of *seasickness* might be prevented by bandaging the eyes with a black bandage to be worn the entire voyage while in the light, whether artificial or natural.

Anyone taking the trouble to inquire of the street and steam car conductors, concerning the sickness and vomiting in their cars, will be surprised at the extent of the trouble.

To recapitulate. I myself, do not believe that car sickness can occur in a person with normal eyes, consequently, I do not believe it will occur in a person who has been properly fitted with glasses. I do not say that it will not occur in those who are

wearing glasses, for it is a fact, or I believe it so to be, that half of the people are not only not wearing ideal corrections, but are wearing false corrections, and are more liable to car sickness than they would be without any.

I also know that the concurring indigestion will be cured with the car sickness.

Finally all cases of violent headaches should be refracted; all cases of persistent indigestion should be refracted and all cases of car and seasickness should be refracted and re (?) refracted.

P. S. Dr. Hopkinson during the discussion stated that he has a patient who used to have car sickness but does not have the trouble while riding in the new trolley cars which have seats placed at right angles to the length of the cars, which has led me to believe that the new cars may be quite a factor in reducing the trouble. The right-angularly placed seats may have much to do with passengers not getting sick in the open cars.

FLESH COLORED POWDERS, OINTMENTS AND PASTES.

By HUGO GOLDSCHMIDT, M. D.,
Dermatologist at Breslau, Germany. Authorized translation by Max R. Dinkelspiel, of Philadelphia.

It has been repeatedly attempted to impart the color of the skin to the salves, powders, and pastes that are used in the treatment of cutaneous diseases, in order to facilitate the application of the medicaments to the exposed portions of the body, and to permit of their employment during the day as well as at night.

The first one to contribute a report concerning medicaments thus colored, was, as far as I have been able to ascertain from literature, Brooke (1) of Manchester. He followed the correct train of thought, namely, to produce the color of the skin by a combination of red, white and brown, or yellow. As the most suitable material for white, he advises zinc oxide; for the red vermilion and *bolus ruber*. This author however leaves the mixing of these various colors to the discretion of the druggist, and states, "it is impossible for the prescriber to state the exact amount of each color required for an individual case". I do not believe that the druggist will be able to hit upon the exact quantities of each color any more than the physician himself, and this mode of procedure is therefore not applicable for practical purposes. Nevertheless, Brooke deserves to be recognized as the first one to name the necessary coloring matters for producing the shade desired.

The highly distinguished dermatologist, Unna (2) of Hamburg, who has contributed so much to the therapy of skin diseases, has also added a contribution upon the subject under consideration, and advises in the first place that ichthyol be employed for the brown color. He also mentions a flesh-colored powder in which ichthyol is not included.

Rausch (3) has also investigated this subject and has suggested a number of substances for the purpose, among which he also mentions a 1-5% ichthyol-zinc paste, colored with eosin, thus meeting the indications spoken of by Brooke; for here we find white represented by the zinc oxide, brown by the ichthyol, and red by the eosin. It is remarkable, however, that his investigations ceased at this point and he did not fully apply Brooke's principles, which are easy of application while employing the eosin and ichthyol to the above described white or yellowish-white ointment bases.

The writer however did this, and has succeeded in discovering a procedure, which meets all the requisites of simplicity and cosmesis. After a number of experiments he succeeded in obtaining an aqueous solution of eosin and ichthyol, which, when added to ointments and pastes, imparts the required shade of the skin. It is only necessary to add ten drops of this solution to every ten grams of salve or paste. I have called the solution "ichthosin", and have subdivided the solution into five others, which, according to the amount of red present, imparts five color gradations; these are designated as ichthosin number 1, number 2, etc., solution number 1, being the one weakest in red. The color turns out very prettily, when the ointment paste contains 10% or more of zinc oxide, an ingredient which is easily added to every salve. The following combination could be prescribed for a flesh-colored zinc paste.

℞

Zinci oxidi alb.		
Amyli trit.	āā	25.0
Vaseline flav.		50.0

Adde ichthosin No. I, etc. (according to the shade desired).

The druggist has only to remember that ten drops of the coloring material are to be added to every ten grams of the ointment, and therefore in the present case 10x10 drops. As the paste already contains zinc oxide, the latter naturally does not have to be again added.

A colored salve containing bismuth would be prescribed as follows:

℞

Hydrargyri praecipitati alb.		
Bismuthi subnitratis	āā	2.5
Zinci oxidi alb.		5.0
Vaseline flav. (or any other base)	q.s.ad	50.0

Adde ichthosin No. I, etc.

The druggist therefore is to add 5x10 drops, as 50 gr. of ointment are prescribed.

Still another example.

℞

Acidi salicylici		0.5
Sulphuris praecipitati		2.0
Zinci oxidi alb.		3.0
Ointment base	q. s. ad	30.0

Adde ichthosin No. I., etc. In this case the druggist should add 3 x 10 drops.

The physician has therefore nothing further incumbent upon him, than to inspect the color of his patient's skin, and to select, according to the tint of red that the skin shows, the necessary solution from the gradations of color at his disposal, and to order it in the prescription. The zinc oxide however is not to be forgotten; 10% is sufficient although more may be employed.

Furthermore, the writer has succeeded with the same method of procedure, in producing certain powders having the color of the skin, which con-

1 H. G. Brooke, Manchester, Monatshefte fuer prakt. Dermatologie, Bd. XI.
2 P. G. Unna. Monatshefte fuer prakt. Dermatologie, Bd. XXVII.
3 H. Rausch, Essen. Monatshefte fuer prakt. Dermatologie, Bd. XXVII.

tain from 5% to 7½% of ichthyol. It would not be very difficult to add the necessary ichthyol to a powder, but would be more difficult to find a combination, to which the necessary amount could be added without interfering with its properties as a dusting powder. A second, and important obstacle was the removal of the ichthyol odor, for even the prettiest appearance and the most delicate consistency would not permit of the application of a powder that imparts the odor of ichthyol. I have succeeded in removing this obstacle after a number of experiments, by means of my ichthosin powder, which meets the most exacting demand as far as cosmesis, odor, and delicacy are concerned. Hence it can be employed in all toilet powders. For a healthy skin the powder is absolutely harmless, and for a diseased skin a valuable remedy.

MEDICAL SCIENCE IN THE NINETEENTH CENTURY.

A Sketch

By J. PAGEL, M. D.,

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Historical contemplations at the close of a century form a well-founded theme, in fact, they are an imperative duty. If the mere change of a year urges the man of education to retrospect and review, how much more will he be induced to do so by the transition into a new century, when, as the history of the world and of civilization so frequently have coincided with transformations in the domain of science, or else were in the state of preparation, and still how much more so in a science, which, like the act of healing, shows in the most supreme manner the *panta ret*, a constant uncessant mutation of things as it were the only permanent, the typical characteristic.

Notwithstanding the quick pace so significant of modern times, a retrospect view of the passed century will confirm that the development did not take place suddenly and abruptly, but was carried into effect very slowly and gradually.

If we intend and were able approximately to denominate an entire epoch of the length of a full and too vicissitudinary century in its principal properties, the designation *technico-physical* century does not appear to be out of place. Religion, phylosophy, social and political movements have with their mutations given name and stamp to former epochs since the era of renaissance. The sixteenth century was allotted its position in history by the religious reformation, the seventeenth by the phylosophical induction, the eighteeth by the political revolution. For the nineteenth, at last, natural science assumed its rights, and if the objection is raised that former centuries can also show conspicuous accomplishments in the realm of natural science, it should be remembered that the cultivation of the same was essentially in the hands of a few investigators who were denied any influence upon the masses, while not until the present time the importance of natural science has been fully brought into prominence as a general means and base of education, as a scource of blessing for the productive life, in one word as a power of civilization of the first order. The inclination to yield the precedence to natural before abstract science certainly has its foundation in many respects, and consequently the above designation as an ornamental epithet for the nineteenth century should be quite permissible.

Now, if we compare with the present state of affairs the beginnings of the last century, they appear to us as something entirely incongruous with the tendencies of the modern time; they create the impression that they never belonged to us, that they could never have been the precursors of the present day. Truly, one does not commit a historical forgery if one considers the first third of the passed century not to be part or beginning of the same, but a branch of the eighteenth, on the ground of which it was still resting, connected with the same in more than one relation by the tie of congeniality. To remind the new generation of this fact is necessary, not only to learn modesty, not only for those who feel inclined to proudly boast of what has been accomplished, but to keep in mind the memory of the struggle which was necessary to overcome tendencies equally wrong as disastrous for the art of healing, but to raise a cautioning voice against possible recurrences, to which apparently not all physicians are sufficiently immune as yet. What incredible aberrations have not been induced by Haller's teachings of irritability! Consider the phantasms and speculations which were matured by the era of natural philosophy! Cullen's nervosism, its offspring, Brown's theory of stimulism with the precious conceptions sthenia and asthenia, their varieties *à la* Rush, Röschlaub & Co., Rasori's bubbles of stimulus and counter stimulus, the vitalism as taught by Montpellier, the "dynamic" theories of Mesmer and Hahnemann, the various bastards out of the union of natural philosophy and mysticism, the vampyrism of Broussais and company, displaying the fraudulent ensign "physiological medicine," and as worthy rearguard blessed Rademacher with his "common sense theory of hygiene"—they all dominated successively and partly synchronously. But for the present an exhaustive description of this first part may not be entered into. Spirit of the spirit of the eighteenth century, its valuation may be left to the hisotrian of the period. Whoever wishes to demonstrate the doings of the physical century *par excellence* in their true shining light, may abide by the later results, and for the older ones be satisfied with the above indications. It is true, objective consideration should not forget that a part of the achievements of the "exact" period originates precisely in those thoughts of the natural philosophical era; many a modern view has the root of its strength in them, and, although by circuitous roads, issued from them. The teachings of vitalism brought forth a Bichat, the father of general anatomy, the endeavors of Schelling, Oken and others, intended to create an all-applicable expression, embracing the laws of nature, the problems of cosmogony and related domains, furnished the anti-fruit for Darwinism; the natural phylosophy, through the larva-state of the parasitical, developed into the so-called natural historical school

*Written at the request of the Editorial Department of Deutsche Medizinal Zeitung, this paper can give but an outline of the development of medical science during the present century.

with Schönlein as one of its original principal representatives, who later on lead the clinic into the course of the exact direction (even in Hahnemann's *chaff* recent pharmacologists claim to have ascertained some granules of truth, and the long tabooed bleeding has again been mentioned by the medical world which had become afraid of blood). That all these phantastic thoughts and considerations would meet with approbation by the great mass of physicians, was caused by their systemania, by their philosophical scholastic systematics, by the ineradicable proclivity of "philosophically" trained physicians, to generalize single observations and facts, and artificially create the missing link by the tie of conjectural contemplations. Continually one tried to form a system upon and from hypothetical knowledge in order to ascertain positive handles for the measures to be taken at the sick-bed; the more learned, the more profound, the more mysterious such a system sounded, the more believers it would find and precisely during the first third of the passed century the craving for action in this relation was so vivacious that one system relieved the other; as soon as the latter was over with, on account of a new discovery, and had proved itself to be impossible, another prophet was ready to fill the gap with a dogma sounding apparently better and more congenial, thus naturally ruffing the older ones. But—may it be emphazised in honor of the medical profession—enlightened heads were not wanting who preserved a sound eclecticism in the midst of all the errors and confusions, who, unbiased by the uproar of systems, calmly and considerately pursued their quiet roads of research and upheld the standard of non-speculative observation of nature. Thanks to their untiring efforts, we finally see the ground appropriately prepared gradually to bring forth from the seed securely contained therein the matured fruit, the exact natural science; unchecked from now on the genius of mankind takes a straight course for its true goal, that of a genuine and sober observation of nature after the principle of induction. The turning about occurred in the fourth decade and to have promoted its full success, this is and will remain to be the honorary title of the departed century. Its roads of entrance were rendered conspicuous by three important stages, leading over the names and deeds of Julius Robert Meyer, Chales Darwin, Louis Pasteur.

Meyer's ingenious discovery of the preservation of power is well-known to have given the *coup de grâce* to vitalistic and similar speculations; it formed the safest base for the liberation of physiology and medical science from the bonds of transcendental ideas; it has ushered into their proper places the laws of physics and chemistry for the understanding of biological and pathological processes, it has methodologically demonstrated the indispensibility of inductive questioning for the investigation of physical problems, and thus mediately created a clear road for unchecked progress.

The spiritual movement which issued in the fecundating theories of Darwin, although almost half a century old, has not quite come to a standstill yet; truly the spirit of inebriation which it had created originally has evaporated; the general storm-and-stress has moderated and gradually given room to a quiet occupation within the narrower limits of the profession, and from here as well the "Darwinism" may show long-lasting after effects. How much the present times are indebted to the same, how conspicuously the emphasizing and systematical elucidation of the theory of evolution has influenced, principally, biology, it will not be possible exhaustively to discuss these points here. The traces of the theory of generation have left their deep, everlasting and indelible marks on modern natural science whose offspring it is at the same time. In Haeckels "biogenetic law," according to which history of germ is equal to history of race, the theory has developed into a consequence of far-reaching prominence, the points of view generated thereby have benefited all sciences, not the least prominently, also, linguistic and historical studies.

Pasteur's achievements finally caused an actual revolution in important chapters of pathology; they lead to pathless roads and to means of prevention or and protection from a large group of dangerous diseases, and thus furnished support and frame-work for the noble structure of modern hygiene.

These accomplishments linked to the labors of the three above named heroes form the properly propelling facts characterizing the mutations of modern medical science.

It does not require any further discussion to show how much the entire modern civilization is imbued with the spirit of natural science, and to what extent it has been transformed by the same. It is here the question of facts which talk for themselves. There is positively no human being in existence in the civilized world who could not oberve its influence daily, nay, hourly. Its praise has been justly sounded in all tunes. For the sake of brevity, and at the same time of completeness, I take the liberty of quoting the respective passage from my *introduction into the history of medical science* (Berlin, 1898, p. 348). It reads: "Concerning primarly the influence of modern natural philosophy upon the political and social conditions, it appears to be guaranteed before all by the rapprochement of nations among themselves, conditioned upon the improvements in general traffic, by the right of self-determination of the people, and promoted by the liberal principle of free speech, free press and free union, by the amelioration of the conduct and conditions of life of the vast masses of the population through the advancement of public hygiene and by the equalization of rich and poor which is brought about by the less well-to-do, sharing in the broadest sense in the blessings of material commodities. In scientific relation the livelier interchange of results of investigation has been facilitated by political emancipation.* Regular national and international (the first in 1867, at Paris), general congresses and associations have been created, a flourishing, almost unbounded journalistic and additional publicity render feasible the

It is to be regretted that here the tide is rather rising than ebbing out. As gratifying as this advancement undoubtedly is in the interest of science, as deplorable is the extreme splitting up which in its place again requires the otherwise absolutely unnecessary, condensing so-called "literature of clippings." One actually does not know what to say that entirely separate special therapeutics branches should have found their own organs. It is certainly very fortunate that we possess a journal with the name "The Brain." What would the medical world do without brain? But finally, what is fair to the brain, should be but fair to other organs, for instance to the penis and the like. Therefore it ought not be a surprise to anybody, if some day a cunning author or publisher would chance to think of this organ, or even might create a journal treating "the boundary district of penis and vagina." Possibly these lines may be the instigation.

rapid dissemination of the most recent acquisitions. Hygiene itself, the energies of which were formerly confined to national limits, became an international and cosmopolitan science in the best sense of the word, of a power eminently conciliating political antagonism and pacifying, preaching humanity and toleration, uniting sound individualism with altruism and communism in reasonable harmony within the power of man. Numerous institutions, clinics, laboratories have been established in the scientific centers for all branches of physiology and hygiene, furnished with the utmost comfort of modern technique; stirring life and activity reign in them in which teachers and disciples participate in numeral superiority compared with other academical faculties. The number of technicians, physicians and physiologists rises into the inmeasurable."

If previously reference has been had to only Meyer, Darwin and Pasteur as the three most prominent pathfinders of modern physiology and hygiene, this limitation was necessary, I am sorry to state, in view of the unbounded profusion of fundamental discoveries in all realms of natural science, which can not possibly be all treated in a sketch. With regard to this as well as to the other parts of this paper, I must refer to the exhaustive text books of history. In my "introduction," etc.. the reader will not miss any essential fact.* Although they are all of more or less consequence for the progress of hygiene, some of them are of greater and immediate importance. As such, Mathias Jacob Scheiden's researches on the theory of the cellular systems, in the domain of botany, should be considered before all, the demonstration of the cell as an elementary organism, especially after this discovery had been corroborated for the animal cell as well, by the investigations of Theodor Schwan, having furnihed the most essential foundation pillar for the proud structure of cellular pathology for which we are indebted to no less a man than Rudolph Virchow. Virchow was also the first—and this we may state right here to be one of the most valuable achievement of the presence—who (the last time at the Congress in Moscow, 1897) clearly and concisely expressed the thought that pathology is nothing but a branch of biology, *i. e.* that disease means life under altered conditions. This knowledge is the nature and at the same time one of the most important fruits of the tree of the cellular theory, and for this the results of the botanical researches formed the required foundation. A second branch which was principally cultivated by phytologists, the infusoriology, became not less conspicuous because the modern bacteriology was founded on the same. Ehrenberg's researches in this relation as the first investigations, still possess more than literary-historical importance to-day.

Manifold impetus was given by Zoology to the progress of biological and pathological knowledge. Here also parasitology should be named in the first place, promoted by the meritorious investigations of Davaine, Küchenmeister, Owen, Bilharz, Leuckart, furthermore the comparative anatomical and anthropologico-ethnographical studies which influenced medical science in many forms in an enriching and transformatory manner. When I come to chemistry and physics, the reciprocal relations of medical science are placed into a brilliant light with overwhelming profusion of accomplishments and discoveries. From the celebrated synthesis of urea, by Friedrich Wöhler, and the fundamental works of Justus vou Liebig, about animal chemistry, down to the epoch-making and immortal innovations of the lately deceased Eugen Baumann and Felix von Hoppe-Seyler—how boundless an increase of knowledge and perception! Chemistry has literally proven itself to be a fecundating and refreshing nourishing spring of medical science, which, without the yields of chemistry, would be without knowledge of the most elementary facts of nutrition and digestion in the healthy and in the pathological state, not counting the numberless and immediate remedies which chemistry supplied us with, principally during the last quarter of a century, like chloroform, ether, hydrate of chloral creosote, salicylic acid, antipyrin. Besides, what would modern medical science be without the auxiliary means of chemical diagnostics? Precisely for diagnostics and semeiology the methods of physics vie with it, and, of course, it does not remain behind its sister discipline in the other relations with its importance of physiological and therapeutic perception. Since the immortal Hermann von Helmholtz with his ingenious discovery of the ophthalmoscope created the paragon for further similar endeavors, and opened the era of the "scopes," light has literally entered into the most obscure cavities of the body. The climax of these methods of elucidation we have at present reached with Röntgen's fortunate discovery. But future generations will in a far higher degree be benefited by its advantages. Furthermore, the improvements of the microscope, the illumination of Abbe, the enlargements of the technique of preparing, of the photographic art, are essentially due to the labors of phyicists which thus furnished means and methods , by the aid of which anatomy and related sciences advanced to an unthought of height. Without bounds, moreover, for the present is the powerful change toward which the entire civilization of mankind is hastening with giant strides, thanks to the overwhelming results of the technique of electricty which practically embodies the progress of modern times. Nothing attains the altitude of what has been or is about to be created in modern times with the aid of electricity.

The justly admired advancement does not date but from the time when the problems of biography were approached by methods of phisiological research, and once for all, did away with all fruitless aprioristic speculations. It shows its full splendor in the biological sciences, inasmuch as histology, respectively microscopical anatomy was practically re-created, and not a stone was left unturned in the inherited structure. Whoever wants to conceive the progress of the passed century in its full grandeur, he should review the works of Henle, Hyrtl, Remak, Kœlliker, von Gerlach, Gruber, Arnold, Max Schultze, Waldeyer, Hertwig, Robin, Sir William Bowman, Hannover, Welcker, Golgi, Ramon y Cajal, Roux and of many others

*The same refers to a thesis which I prepared especially for Vols. I and III of the "Edition de Luxe" of the great Hans Kraemer" The XIX Century in Word and Picture.

more. The material has already assumed such dimensions that for its complete mastery in teaching and learning, one interpreter will not be sufficient any longer, so that even within this limited specialty, further divisions of labor may become imperative. If one wanted to enumerate all the achievements of histology, a work of respectable size would scarcely suffice.

The same in a still higher degree may be applied to physiology and its appendices. It is well known how powerful an advancement of this discipline issued from the animal experiment. Since the importance of the same had again been emphasized by Francois Magendie, discovery followed discovery. Previously already, Charles Bell, with his famous law, had opened the procession, Marshall Hall, in 1837, had made the knowledge of the reflected movements common property. Flourens at the same time discovered the *point vital* as respiratory center, and thus furnished the first basis of the theory of localization, which later on was advanced by Bacon by the finding of the speech-center (1863), and principally during the most recent period by Fritsch, Hitzig, Hermann, Munk and others. Claude Bernard, the "most fortunate experimenter of all times," followed with a profusion of innovations, reported on his works on the pancreas, on the so-called "sugar twitch," on the vasomotor functions of the sympathicus. Duchenne de Boulogne enriched muscular physiology; the great German school of physiologists, at their head Johannes Müller with its principal representatives. Hermann von Helmholtz, one of the greatest geniuses of all times, the genial du Bois-Reymond, Ernst von Brücke, Karl von Vierordt, Karl Ludwig, they all have, according to their power, contributed to the noble structure of modern physiology, and founded in this discipline an exact natural science which forms the proper element of life, the real scientific foundation of medical efficiency.

Ranking with the above authors are the Hollander Donders, the Dane Panum, the Swiss Moleschott and Schiff, the Italian Tommasi and the numerous physiological chemists, the most prominent of whom we may be satisfied to name, Gmelin, Tiedemann, Prout, Lehmann, Marchand, Heller, Scherer of the older, Karl Schmidt, von Voit, Baumann and Hoppe-Seyler of the more recent period of the last century.

If the animal experiment fully elucidated the problems of life in physiology, its rôle in pathology, *i. c.*, in the doctrine of disease, was not less conspicuous. With the revival of the experimental pathology by Traube's ingenious treatises, a new productive period approached also for the study of pathological manifestations, especially after Rokitansky, of Vienna, the "Linnaeus of pathological anatomy," supported by a voluminous material, had given the classical, systematical description of all microscopical autopsies, and when Virchow had supplemented these by inauguration of the pathological histology, likewise in connection with experiments. Now the pathology was essentially complete as "cellular pathology," now the conception was established for all times that morbidity is nothing else but life under different conditions. Not any longer vague expressions without any substratum, like *physis*, archaeus, anima and whatever names were given to those things, had the right of existence in medical science. Thanks to Robert Koch and the bacteriology he created, the "miasms and contagions" have lost their citizenship, we know now where to look for, to find, to attack, to strike the real causes of most diseases; we have acquired fairly accurate handles for prophylaxis, and therapeutics, our art has been able to shape itself both in a preventive and in a healing respect more to the point, more certain, more efficient, more successful. Unconstrained bacteriology became subordinate to the principle of the cellular pathological theory supporting and fecundating the same, they both form the fundamental pillars of modern medical science.

Thus it has occurred that designations like special patholgy and therapy should not be mentioned in one breath any longer. Here also the scientific material had assumed gigantic dimensions that differentiation became inavoidable. Not only did the therapy commence to choose its own road, but likewise within the limits of pathology "division of labor" is now the determining shiboleth and watchword.

Nothing is more symptomatic of the mutation of modern times than the plentiful display of branches on the medical tree, the everywhere felt necessity of specialism. The therapy was known and appreciated by the older generation as an appendix of patholgy only, many physically aspiring and inclined physicians even treated it stepmotherly not to say disrespectfully; to-day it is an extensive independent domain which is served by a flood of organs of quite a number of different special branches. Possibly the time is close at hand when even text books of prognosis, of prophylaxis, of differential diagnostic may attempt the light of publicity. In place of the trilogy, internal medicine, surgery and obstetrics almost a decade of specialties, and specialties of specialties, have appeared. The purified general pathological views and the means of the physico-chemical diagnostic, enabled the medical profession to gather in less than a quarter of a century a material of facts which formerly could not be collected in centuries.

The mutation which was founded on the physical diagnostic, has had its origin in the clinic of diseases of respiration and circulation. Skoda, his disciple, and at the same time Schönlein's assistant, Traube, were able well to guard the inheritance left by the fathers which was bequeathed in Auenbrugger's *Inventum novum*, in Corvisart's works and in Laënnec's "Traitè," if one considers enlargement to be the best preservation. The works of Andrel, Bayle, Bretonneau, Chomel, Cruveihier, Louis, etc., mean a good beginning of the last century, in-asmuch as they made the first not at all timid attempts to prove the harmony between autopsy and clinic, and thus to lead the practitioner to the only road usable for him. Men like Trousseau, Lasegue, Valleix, G. Sée, Villemin, C. Paul, in France, Alison, Bright, Clark, Addison, Graves, Stokes, Wood and others in England, furthermore the Germans, Schönlein, Nasse, Krukenberg, Oppolzer, Bamberger, Duchek, Kahler, Pfeufer, Lebert, Wunderlich, Griesinger, Frerichs, Friedreich, Kussmaul, von Ziemssen, Nothnagel, von Leyden, Gerhardt, the Italians,

Semmola and Cantini have continued to work in the same direction. Literally, not one chapter of special pathology has remained without thoroughly revolutionizing innovations. Entirely new methods for investigation, devised with technical refinement have taken root in the clinic of affections of digestion. Diagnostics have become almost surgically and then almost materially improved therapy. Quite a new discipline has arisen with the nervous diseases. Masters like the already mentioned Duchenne (de Boulogne), Charcot, Romberg, Griesinger share in its building up and enlargement. It could not be attempted here, on account of having to consider other chapters which then would have to be cut down, to illustrate the metamorphosis by an example. Just this example would be able to demonstrate how very important is also the knowledge of histological conditions for the conception of systemic diseases, whose revelation became feasible only by the same.

In psychiatry the bonds of spiritualism were shattered and so also those of the old methods of treatment by force were taken off the poor demented. In "no restraint" and in the somato-materialistic conception, also of the so-called "psychical" affections, one of the most important advancements of medical science, as well of general civilization is represented. Pinell, John Conolly, Jacobi, Griesinger, were the principal supporters and champions of this theory. Meynert, Kahlbaum, Snell, Morel and many others deserve credit for their detail works.

The blessings of bacteriological revelations have amply benefited infectious diseases, in relation both to prophylaxis and therapeutics. Traumatic and puerperal fever, rheumatic processes, in fact the majority of acute pyretic diseases has been recognized to be of an essentially infectious character—recognized—the word is to be emphasized. Formerly one only guessed, presumed, believed, but knew almost next to nothing, or one had only a faint certainty of cognision.

The nineteenth century, thanks to the powerful researches of Koch and his disciples, which embraces all who work in accord with his methods, has taught to know for a great number of diseases—the facts are known and we do not have to mention any names—the actual generator and disseminator of the infection, for many other affections one is on the right road to it. The work, left in this respect to the new century by the nineteenth, will undoubtedly be accomplished. Not only has light driver out night in the knowledge of etiology, but synchronously effective handles have been acquired for prophylaxis and therapeutics, a truly scientific support for aimful and nearly infalliable measures. At the same time the whole theory has been materially simplified, and the old device *simplex sigillum veri* is about to be honored again.

Now let us consider internal therapy. If ever something has been fluctuated in the medical science of the nineteenth century, it has been this branch—true to the traditions of older epochs. The struggles between sanguinic optimism (in the literal sense) and nihilistic pessimism were kindled in the liveliest manner at the beginning of the past century especially in the domain of pneumonia treatment, and, practically, they have not been fully settled today yet. What has actually been gained? I think, the knowledge, that therapy is no science which may be forced into a mould or into a known pattern, but is a subjectively and objectively individual art which has to find nourishment in all directions. The war cry: here physico-dietetic, here pharmaceutical treatment is scarcely able to confuse logically trained physicinas. One as well as the other is justified. That oxygen, after its discovery at the beginning of the nineteenth century, was tried and lauded as a universal therapeutic factor; that transiently electricity, magnetism, the mysticysm of homeopathy were to be put in its place purposely—this has partly been forgotten and I do not wish to remind of it here Neither could the absolute nihilism of the Vienna school be kept up very long. *Medio tutissimus ibis.* We became acquainted with very good, indispensible pharmaceutical remedies in many alkaloids, in many remedies of the group with a benzol nucleus, we have rehabilitated water in the treatment of pyretic affections (Brand), we were taught new directions in the therapy of tuberculosis (von Brehmer), we gained new appreciable points of view by terrain curves (*à la* Oertel), the anti-bacterial, antitoxin therapy, or "etiological," as it is called by their originators (Behring and company), reveals a perspective of unlimited reach, and may possibly, when fully adopted and unassailably established, be claimed by the twentieth century as its legitimate property; the same in a higher degree is meant for the modern organic therapy for which just now (by Brown-Sequard and others) only the rudiments have been furnished purely empiristically, and we hope will yield a good many useful results in the future. Time will tell whether Gerster-Braunfels, the meritorious editor of *Hygieia* will carry his point with his opposition to antitoxin.*

If these hopes are going to be realized, and it appears, according to the present state of affairs, one is entitled to cherish them, then surgery will be forced to cede back some of its meanwhile gained superiority over internal medicine to the latter.

Just at present, however, the former is beyond doubt entitled to a certain precedence in relation to medical ability. It is ready even to claim a goodly share of the so-called internal diseases. The physicians without exception are endeavoring to make the diagnosis also of the latter a surgical one, if possible, but even the method of cure in a number of affections is entrusted to the knife of the surgeon, something of which formerly nobody would have ever thought. May it be permitted to call attention to the greatest achievement of the past century, to the surgery of the intestine, the principal share of which is due to the genius of Theodor Billroth. The great American discovery of (ether) narcosis, antisepsis, created by Lister, and modified to asepsis by the works of Koch, the bloodless method of operating of Esmarch, are the three deeds which

*If Herr von Leyden, in his beautiful inaugural lecture for the winter semester, 1899-1900 (cf. Berl. klin. Wochenschrift, 48-49) emphasizes that the clinic of to-day is again under the influence of therapy, I wish to mention here that the statement holds good for the educational instructive side of the clinic. The importance, though, of therapy for school and life has at all times and especially in the 19th century, been acknowledged.

only could give encouragement to the venture of intestinal operations. Surgery has celebrated unthought of triumphs in the performances of the Germans, Dieffenbach, K. F. von Graefe, Heine, Stromeyer, von Langenbeck, Thiersch, Volkmann, Gustav Simon, von Nussbaum, Lücke, Socin. of the Frenchmen (only to mention the representatives of a more recent period) Velpeau, Amussat, Chassaignac, Malgaigne, Nélaton, Verneuil, Le Fort, of the Englishmen, Synne, Ferguson, Sir Porter, of the Russian, Pirogoff and others. Formerly just the reverse of Asclepiades' well-known expression, to-day surgical therapy fulfills all the conditions to answer the *tuto cito jucunde.* Surgery reflects the altitude of the departed century in the union of art and science.

Two of the fundaments of modern surgery have given a different shape to modern obtetrics. Chloroform, discovered in 1831, by Soubeiran, and produced in 1832 by Liebig, was introduced at the puerperium in 1847 by Sir James Young Simpson, Ignaz Philipp Semmelweis, the precursor of Lister, published in 1861 his famous, always remarkable thesis: "The etiology, the meaning and the prophylaxis of puerperal fever." The progress of asepsis has gradually transformed the older gynecology into gynecosurgery. Ovariotomy which in pre-antiseptic times had been performed occasionally, received permanet citizenship in gynecology by the master skill of Thomas Spencer Wells; Marion Sims, in 1846, invented the speculum honored by his name, recommended silver wire sutures in 1852, and in 1849 accomplished the cure of vesicovaginal fistula, which until then had been considered impossible. Karl Schroeder simplified he armamentarium in ovariotomies, introduced vaginal extirpation of the uterus, which were perfected by Jules Péan, and, to also remember older events, in 1818 Récamier made known his vaginal speculum, Hodge in 1830 his pessary—in one word, gynecology also, formerly a modest, by practitioners much neglected appendix of obstetrics, at the onset of the twentieth century, stands out as a stately special branch, the peer of surgery. In regard to the number of physicians who direct their attention to this branch, gynecology is possibly only surpassed by ophthalmology, which, since the already mentioned invention of Helmholz and the ingenious activity of Albert von Graefe, likewise entered into a new epoch

This is not the place to enumerate the different enrichments which the last century has accorded to this discipline, it also became the paragon for the development of laryngology, which likewise entered upon a new phase by I. N. Czermak's introduction of the laryngoscope in 1858. Its further formation was ably supported by men like L. Türck, J. Schnitzler, Georg Lewin, V. von Bruns, Voltolini, Gottstein, Karl Stoerk, Tobold, B. Fraenkel, Morrell Mackenzie, Isambert. The same applies to otorhinology for the advancement of which in modern times we are indebted to von Tröltch, Sal. Moos, Gruber, Hans Vilhelm Meyer, Yearsly, Toynbee, Wilde, and also the founder of the *British Medical Journal,* Ernest Hart, who died in 1898. The new century will have to show how far the so-called autoscopy or direct inspection of the larynx will prove to be a generally usuable method for the practitioner.

Dentistry also became more and more conscious of its old origin in the womb of general medical science, and again entered into closer. connection with the same in spite or just in consequence of the specialistic growth. American physicians deserve especial credit for its cultivation and advancement. Of Germans, the Graefe of stomatology, H. E. W. Albrecht, may be mentioned, the first extraordinary professor of his discipline at Berlin.

Syphilis flourished in conjunction with dermatology; both are still combined traditionally; possibly the new century creates even here the exterior separation which has partly commenced already.

The construction of the endoscope by Desormeaux (1863), the labors of Fürstenheim, Grünfeld, Nitze and others of more recent date advanced the transformation of urinary diseases, and of those the bladder to a so-called specialty. As in all other departments of medical science, the development of technique has just here been the instigator for the progress of the science. Therefore, now the nosocomia with a perfected armentarium impresses many as something new.

The founding of hygiene as an exact science, forms the acme of the century and also the acknowledgement of its worth, as much for the education of the physicians as for the welfare of the State.

A visible connection could be formed here between hygiene and general civilization, here is presented the powerful influence of medical science upon the prosperity of the entire public life, the indispensibilty of medical science as one of the most important fundaments and factors of civilization. Since von Pettenkofer at first applied the results of chemical researches to the elucidation of hygienic questions, and Koch inaugurated the period of bacteriology, hygiene has entered into the line of fully legitimate self-dependent diciplines. It would require the room of an independent monography to describe what has been accomplished here. Thanks to its great achievements hygiene exerts its influence upon the entire human life, it is full of interest wherever grasped, to use Goethe's words. It also about to create essentially different exterior conditons of life for the medical profession, because as soon as its importance with all its consequences has been truly acknowledged by the competent authorities, and the chance of an energetic material initiative accorded to the latter, the social position of the physician is bound to undergo a change, in the first place by creation of an amply supplied class of medical officers, endowed with strong and dignified privileges, then by regulation of the relations and position of the physician regarding the so-called social hygienic institutions in favor of the laboring classes (created in Germany since 1883), and finally by improvements in the preparation and training of the physicians. For the present we are in a stage of development, in a condition of growth, the consequences of the innovations introduced with the social legislation can not be fully overlooked yet.

The new century will undoubtedly mature new

and healthy fruits on this domain also. Let us hope and wish for the best.

And now to the conclusion. What is the historical review to teach us? Because it would be unnecessary, without moral developments being carried into effect unrestrainably. They may be detained momentarily, but can not be killed in the long run. Progress is bound to be victorious, and will finally conquer with elementary power. Exterior bounds, legislation *ad hoc*, artificial bars may detain the spirit of the times for a short while, but can not fully suppress it. Whoever has recourse to any kind of means to forcibly keep down natural popular progress. is wronging the human race. One should even allow the monster of retrocession to rage for a while; this is the best manner to permanently annihilate it. It is the task of the legislators, to recognize in advance the trend of the times, with far reaching look, and to accordingly direct the masses, but not to thrust back the world. If women, for instance, now intend and are able to vie with men in the art of healing, let them do so by all means. The experiment may be tried and time will tell whether such endeavors will last. To legally restrict quackery, we do not only consider useless, but actually against the interests of the medical profession. Real prevention of an evil like quackery can only be accomplished—I repeat for the one thousand and first time what I have said a thousand times before—by a good preparation and training of the medical students, in the creation of a dignified class of medical officers, establishment of well-directed communal hospitals. This task alone we leave to the authorities. In all other relations the profession will be able to help themselves, even without parliaments of physicians and courts of honor. But what is required to aid the medical profession, as well as science and cultivation, is the abolition of tutelage of the people, better, more liberal education of the masses of the people in the schools; one ought to give it up to entertain youth with systemic creations of legends and accustom them to mystic ideas, the people should be trained to think, to observe "technico-physically." Restrictions of trade, absorption by the State of independent industries should be done away with.

If thus the true popular progress in culture and education is advanced, then, with the improvement of science in general, the representatives of the medical profession will thrive materially, for medical science is and will remain a part of the general civilization. Let specialism in medicine have its way for the present. We hope that in a future, not too remote, time the study of the art of healing will only be chosen by artistically gifted young men. The struggle for existence will do the sifting, and when the proper material is at hand, universally trained physicians, versed in all branches, will not be wanting any longer. In such a manner the specialism in the shape it presents itself to-day, will *eo ipso* loose its ground, and more favorable conditions of life for the entire profession will reign in future. *Qui vivra verra.* May the profession flourish, grow and thrive in the new century.

PERNICIOUS ANEMIA IN THE LIGHT OF THE MODERN TOXIN HYPOTHESIS.

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(Continued from Page 215.)

Formerly Ehrlich also referred to the different mode of origin of normo- and megaloblasts. As late as 1892 he laid special stress upon the fact (21) that, while a megaloblast forms only a single blood disc, "a normoblast may, on the other hand, produce a whole brood of corpuscles," and that in the manner first reported by Rindfleisch, that the expelled nucleus again surrounds itself with protoplasm, and thus develops into a new normoblast. It appears that Ehrlich has now discarded this hypothesis which was based on no facts at all.

After having critically examined Ehrlich's arguments in favor of the inappropriateness of the megaloblastic transformation, I take the liberty of reporting an observation which is bound to claim especial interest here. The fact is, I have seen, in cases of severe bothriocephalus anemia which terminated in recovery, red blood corpuscles during convalescence, the diameter of which measured 10 microns and more, and that throughout in much larger quantities than during the acme of the disease, for example in case 53 before the worm cure 12 per cent., and eighteen days after the same, when the number of blood corpuscles had increased by about one million, 52 per cent, megalocytes. In case 67 before expulsion of the parasite 7 per cent., and 29 days afterward 51 per cent., etc. In these cases, therefore, it was the question of an enormous increase of the megalocytes and, although it was not as high-graded in the other instances, it caused the greatest interest even before I had taken any measurements.

If, as is generally assumed, the megalocytes issue from the megaloblasts, the just mentioned symptom must necessarily imply that the megaloblastic transformation of the bone marrow continues to be present during a very considerable part of the regeneration.* If Ehrlich's opinion were correct, this conduct would result in a very slow increase of the blood corpuscles. However, the converse was the case, because the daily increase of erythrocytes frequently amounted to 100,000 and sometimes to far more.

We are, therefore, forced to assume that the megaloblastic transformation of the bone marrow is not of such an unfavorable significance as Ehrlich ascribes to it.

I have already expressed this opinion in 1894 (89,

*This appears very likely to be a priori. For how would it be possible, that the megaloblastic transformation could be reduced immediately after the worm cure? If it is difficult to suppose such an event, this assumption becomes almost inconcelvable, if one considers, the same as Ehrlich does, the norma- and megaloblasts as fundamentally differentiated kinds of cells, and still more so, if one regards the megaloblastic degeneration, with H. F. Mueller (65) to be a tumorlike metamorphosis.

That the megalocytes are more numerous during convalescence than at the height of the anemia I have tried to explain (89, p. 188) by the fact that during the acme of the disease a part of these blood cells becomes fragmentary. After the parasite and with it the source of the toxin has been removed from the organism, the process of fragmentation gradually ceases and, in consequence, the numbr of megalocytes increases.

p. 205), but my dictum of that date has until now escaped the attention of the investigators, as far as I have seen. Not until the following year attention was drawn to this opinion by a paper published by Askanazy (3).

This author, as is known, arrived at this conclusion mainly by reason of a severe case of bothriocephalus anemia in which complete recovery was accomplished, although numerous megaloblasts were present in the blood.

I myself observed several similar cases and wish to lay special stress upon case 54, because it forms a counterpart of that described by Askanazy. Extraordinarily large numbers of megaloblasts could be recognized in this instance and yet it terminated in speedy recovery.

In this connection it will be of interest to discuss, whether and how the relative behavior between the number of the normo- and megaloblasts occurring in the blood is able to exert a demonstrable influence upon the prognosis. According to the opinion of Ehrlich it may be surmised that this could be the case.

I have investigated 26 cases of bothriocephalus anemia which I observed in reference to this point. In twenty cases I found both megalo- and normoblasts, in five only megaloblasts and in only a single instance could I find normoblasts exclusively. While all the latter six cases terminated in recovery, four of the twenty former ones took a fatal course. As much as can be judged from this rather insufficient material, it seems that the prognosis is at least not worse in the cases in which only megaloblasts occur, than in those which show both megaloblasts and normoblasts.

Everything considered I come to the conclusion, not "the megaloblastic degeneration" *per se*, but rather the fact that the cause of the increased destruction of the blood is not removable in most cases, forms the true reason for the unfavorable prognosis in this affection. In fact, the possibility cannot be quite dismissed, that the megaloblastic transformation is the expression of a salutary process which is able not to paralize but to ameliorate and to retard the injurious eects of the toxin.

Finally I wish to specially remark that with these objections to Ehrlich's views I do not at all mean to deny any clinical significance whatever of the megalocytes and megaloblasts. They will always continue to occupy a prominent place for me in the symtomatology of severe anemias, only they do not have the exclusively determining importance in a diagostic and prognostic respect which Ehrlich means to ascribe to them.

In discussing the conditions of the nuclei of the erythroblasts it should not be omitted to mention that sometimes typical mitoses have been observed in some of the red blood corpuscles in pernicious anemia. At first described by v. Noorden (71), Askanazy (2 and 3) and myself (89), they were later also noticed by other investigators who have studied pernicious anemia. According to Askanazy they are found in cases which show very numerous nucleated erythrocytes, and they occur, as a rule, only in blood corpuscles of considerable size. But no prognostic significance can be attributed to them, because we find them in lethal cases as well as in favorable ones—Askanazy (3) and Schauman (89).

The protoplasm of the red blood corpuscles also presents certain changes in pernicious anemia which I cannot pass unnoticed.

I name before all the remarkable staining anomaly, known under the name anemia degeneration (Ehrlich) or polychromatophilia (Gabritschewsky), that the body of the erythrocytes can at the same time be stained by basic and acid stains.

This tinctorial conduct is ordinarily observed in not too large a part of the erythrocytes. But it may occur in red corpuscles with nucleus as well as without, and that more frequently in megaloblasts than in normoblasts.

To explain this peculiar manifestation two opposite opinions were held until quite recently.

Ehrlich regarded it to be a degenerative phenomenon and accordingly considered the polychromatophilous blood discs dying cells, an opinion defended also by Maragliano and Pappenheim.

Gabritschewsky, on the other hand, claimed these elements to be young cells about to develop, and this view was later sustained by Askanazy, Denim and Engel.

I myself have not held any positive view in regard to this question. I only emphasized (89, p. 144) the fact mentioned by Askanazy, that sometimes polychromatophilous protoplasm is met with in blood cells which are in the process of karyokinesis, does not at all contradict Ehrlich's opinion, because there is nothing to prevent the multiplication also of degenerating cells. I still hold to this view, especially as it is known that proliferations of nuclei usually occur in degenerating muscle and nerve fibers. But in spite of this I must now confess to be a decided adherent of Gabritschewsky's standpoint, in the first place, because I do not consider any of the reasons advanced in favor of the degenerating character of the manifestation in question—Ehrlich and Lazarus (22, p. 33)—to be valid, and furthermore, because Engel's (24) exhaustive investigations of the embryonal blood have demonstrated that the polychromatophilia is to be considered a physiological occurrence.

This reasoning is reinforced by the fact, as first emphasized by Gabritschewsky, that polychromatophilous cells in birds and reptiles represent young elements. It is true, jointly with Ehrlich the objection may be raised that, what holds good for these animals, cannot be indiscriminately applied to human beings, but at the same time it should be remarked that Ehrlich himself (22, p. 34), in his experiments to explain this phenomenon, refers likewise to the results of the animal experiment (inanition).

Another change which in tincturing is sometimes found in the protoplasm of the red blood corpuscles when staining with some of the usual stains (eosin-methylen blue or eosin-hematoxylin), are partly very fine, partly larger basophilous granules. This is a phenomenon to which Askanazy (2), Lazarus (54b) and I (89, p. 144) have called attention several years ago.

Quite recently the study of this phenomenon has been taken up with special zeal and it has been demonstrated that it may also occur in several other

pathological, but mostly anemic conditions. The opinions diverge as yet regarding the character and the origin of these formations. While some authors believe that they are probably remainders of nuclei —Strauss (97), Litten (58), Engel (25) and others— others think that they have nothing to do with the substance of the nucleus, but originate in the protoplasma—Bloch (10), Grawitz (37) and others. The fact appears determining to me—Schaumann (89), p. 147), Lazarus (54a, p. 115), Bloch (10)—that these elements have also been found in blood corpuscles with typical mitoses. There cannot be any question of the disintegration of the nucleus, unless one assumes with Engel that a second nucleus had been present in these cells, which, however, appears to be an exceedingly forced assumption.

If I therefore incline to believe that the basophilous granules originate generally in the protoplasma, yet I do not mean to deny, the same as Grawitz, that similar formations may sometimes be caused by karyorhexis. In my paper on bothriocephalus anemia I have illustrated several of them from the circulating blood as well as from the bone marrow, but they are mostly considerably larger than the above mentioned punctiform granules.

I leave it undecided whether the latter, as Grawitz and others assume, are to be regarded as signs of a degenerative process, at any rate they are of no great importance in a diagnostic and prognostic respect in pernicious anemia.

The changes in the red blood corpuscles which are of interest to us at present, are concluded with the above, and it would only remain to discuss the conduct of the white blood corpuscles in pernicious anemia. But I refrain from doing so because these elements seem to be of minor importance in this connection, as far as can be judged from the results of investigation known at present.

One remark before I close. Although it must be admitted from what has been said, that the toxin hypothesis has prepared a better understanding of many factors which previously were difficult to comprehend in the pathogenesis of pernicious anemia, we cannot deny that the ultimate explanation is still wanting not only of most of the details, but also of many principal points. It is the object of future clinical and experimental investigations to take up these problems with unswerving energy and lucid questioning.

REFERENCES.

1. AHLFELD, F., Lehrbuch der Geburtshilfe. Leipzig 1898.
2. ASKANAZY, S., Ueber einen interessanten Blutbefund bei rapid letal verlaufender pernicioeser Anaemie. Zeitschr f. klin. Medicin 1893. Bd. 23.
3. ASKANAZY, S., Ueber Bothriocephalus-Anaemie und die prognostische Bedeutung der Megaloblasten im anaemischen Blut. Zeitschr. f. klin. Medicin, 1895. Bd. 27.
4. BATTISTINI, F. u. ROVERE, L., Experimentelle Beobachtungen ueber Anaemien, hervorgebracht durch Vergiftung mit Pyrodin. Ac. di medic. di Torino, Seduta del 14 Giugno 1897. Ref. in Centralbl. f. allg. Path. u. path. Anat. 1898. Bd. 9, p. 325.
5. BETTMANN, S., Ueber den Einfluss des Arseniks auf das Blut und das Knochenmark des Kaninchens. Beitraege zur path. Anat. u. zur allgem. Path. 1898. Bd. 23.
6. BIERFREUND, M., Ueber den Haemoglobingehalt bei auf den Wiedererersatz von Blutverlusten. Arch. f. klin. Chirurgie 1890. Bd. 41.
7. BIERMER, Korrespondenzblatt fuer schweizerische Aerzte 1872. Nr. 1.
8. BIGNAMI u. DIONISI, Die postmalarischen und die experimentellen, chronischen toxischen Anaemien. Centralbl. f. allg. Path. u. path. Anat. 1894. Bd. 5.
9. BIRCH-HIRSCHFELD, Ueber schwere anaemische Zustaende. XI. Kongress f. innere Medicin, 1892.
10. BLOCH, Verhandlungen des Vereins fuer innere Medicin in Berlin. Deutsch. med. Wochenschr. 1899. Nr. 48.
    BLOCH, Verhandlungen der Berliner medicin. Gesellschaft. Berliner klin. Wochenschr. 1900. Nr. 7.
11. BOHLAND, K., Ueber die Eiweisszersetzung bei der Anchylostomiasis. Muench. med. Wochenschr. 1894. Nr. 46.
12. BOHR, CHR., Ueber die Lungenathmung. Skandinavisches Arch. f. Physiologie 1891. Bd. 2.
13. BRUHN-FAHRAEUS, M., Tva fall af bothriocephalusanaemi. Hygiea 1896. Bd. 58.
14. BYROM BRAMWELL, Anaemia and diseases of the ductless glands. Edinburgh 1899.
15. CAHN u. v. MERING, Die Saeuren des gesunden und kranken Magens. Deutsch. Arch. f. klin. Medicin. 1886 Bd. 39.
16. COHNHEIM, J., Erkrankung des Knochenmarkes bei pernicioeser Anaemie. Virchow's Arch. 1876. Bd. 68.
17. DEHIO, K., Ueber schwere anaemische Zustaende. Diskussion. XI. Kongress f. innere Medicin 1892.
18. DOMINICI, Hematies nuclees et reactions de la moelle osseuse. La Semaine medicale 1896.
19. DUNIN, TH., Ueber anaemische Zustaende. Volkmann's Sammlung klin. Vortraege. Nr. 135. 1895.
20. EHRLICH, P., Farbenanalytische Untersuchungen zur Histologie und Klinik des Blutes. Berlin 1891.
21. EHRLICH, P., Ueber schwere anaemische Zustaende. XI. Kongress f. innere Medicin 1892.
22. EHRLICH, P., u. LAZARUS, A., Die Anaemie. Nothnagel's specielle Pathologie und Therapie. Bd. VIII. 1. Theil. 1. Heft. Wien 1898.
23. EICHHORST, H., Die progressive pernicioese Anaemie. Leipzig 1878.
24. ENGEL, C. S., Ueber embryonale und pathologische rothe Blutkoerperchen. Verhandl. d. Vereins f. innere Medicin zu Berlin. Berliner klin. Wochenschr. 1898. Nr. 49.
25. ENGEL, C. S., Demonstration embryologischer Blutpraeparate zur Veranschaulichung des Kernschwundes. Verhandl. d. Berl. med. Gesellschaft. Berl. klin. Wochenschr. 1899. Nr. 26.
26. ENGEL, C. S., Ueber einen Fall von pernicioeser Anaemie mit gelbem Knochenmark in den Epiphysen. Zeitschr. f. klin. Medicin 1900. Bd. 40.
27. ENGELSEN, E., Undersogelser over Blodlegemernes Antal, Haemoglobinmaengde og Storrelse. Kjobenhavn 1884.
28. ERVANT ARSLAN, L'anemie des mineurs chez les enfants. Revue mens. des malad. de l'enfance 1892.
29. EWALD, C. A., Ueber eine unmittelbar lebensrettende Transfusion bei schwerster chronischer Anaemie. Berliner klin. Wochenschr. 1895. Nr. 45. Bericht ueber den Verlauf des am 16./X. 1895 vorgestellten Falles von pernicioeser Anaemie (mit Demonstration). Vorstellung eines Falles von Bothriocephalus-Anaemie. Berliner klin. Wochenschr. 1896. Nr. 10.
30. FABER, K., u. BLOCH, C. E., Ueber die pathologischen Veraenderungen am Digestionstractus bei der pernicioesen Anaemie und ueber die sogenannte Darmatrophie. Zeitschr. f. klin. Med. 1900. Bd. 40.
31. FENWICK, S., Lecture on atrophy of the stomach. The Lancet 1877.
32. FERRANTE APORTI. Ricerche sulla patogenesi dell' anemia. Arch. ital. di Clin. med. XXXVI, 1897. Ref. in Schmidt's Jahrbuechern 1898. Bd. 257.
33. GABRITSCHEWSKY, G., Klinische haematologische Notizen. Arch. f. exp. Pathol. u. Pharmakol. 1891. Bd. 28.
34. GERLACH, W., Kritische Bemerkungen zur gegenwaertigen Lehre von der Darmatrophie. Deutsch. Arch. f. klin. Medicin 1896. Bd. 57.
35. GRAM, CHR., Undersogelser over de rode Blodlegemers Storrelse hos mennesket. Kjobenhavn 1893.
36. GRAWITZ, E., Ueber Begriffsbestimmung, Ursachen und Behandlung der progressiven pernicioesen Anaemie. Berliner klin. Wochenschr. 1898. Nr. 32 u. 33. (S. A.)
37. GRAWITZ, E., Die klinische Bedeutung und experimentelle Erzeugung koerniger Degenerationen in den rothen Blutkoerperchen. Berliner klin. Wochenschr. 1900. Nr. 9. (S. A.)
38. HABEL, A., Ueber Darmatrophie. Virchow's Arch. 1898. Bd. 153.
39. HAYEM, G., Du sang et de ses alterations anatomiques. Paris 1889.
40. HAYEM, G., Lecons de therapeutique. Quatrieme et derniere serie. Paris 1893.
41. HERTWIG, O., Die Zelle und die Gewebe. 2. Buch. Jena 1898.
42. V. HOFMANN, E. R., Lehrbuch d. gerichtlichen Medicin. Wien u. Leipzig 1898.
43. HOPPE-SEYLER, F., Physiologische Chemie. Berlin 1881.
44. HUNTER, W., An Investigation into the Pathology of Pernicious Anaemia. Lancet, Sept. 22, 29 and Oct. 6, 1888.
45. HUNTER, W., Lecons sur la physiologie et la pathogenie de la destruction du sang. Gazette medicale de Paris 1893.
46. IMMERMANN, H., Ueber progressive pernicioese Anaemie. Deutsch. Arch. f. klin. Med. 1874. Bd. 13.
47. IMMERMANN, H., Progressive pernicioese Anaemie. Handb. d. spec. Path. u. Therap. von Ziemssen. Bd. 13. Leipzig 1875.
48. JUERGENSEN, Diskussion zu Lichtheim's Vortrag. VI. Kongress f. innere Medicin 1887.
49. KLEIN, Ber. der Rudolphstiftung in Wien 1891. Wien 1892. Cit. nach R. Schmalz, Die Pathologie des Blutes u. die Blutkrankheiten. Leipzig 1896.
50. KLIMENKO, W. N., Untersuchungen ueber die Verbreitung der Helminthen in Finland. Dissertation. St. Petersburg 1895 (russisch).

51. KOCH, M., Ueber Veraenderungen am Magen und Darm bei der pernicioesen Anaemie. Dissertation. Berlin 1898.
52a. LAACHE, S., Die Anaemie. Universitaets-Programm. Christiania 1892.
52b. LAACHE, S., Krankheiten des Blutes. Handbuch d. prakt. Medicin von Ebstein u. Schwalbe. Stuttgart 1898.
53. LANDERER, citirt nach BIERFREUND (6).
54a. LAZARUS, A., Die Anaemie. II. Abtheilung. Klinik der Anaemien. Nothnagels specielle Pathologie u. Therapie. Bd. VIII, I. Theil. 11 Heft. Wien 1900.
54b. LAZARUS, A., Blutbefund bei pernicioeser Anaemie. Deutsche med. Wochenschr. 1896. Nr. 23.
55. LEICHTENSTERN, O., Ueber Ankylostoma duodenale. Wiener klin. Rundschau 1898. Nr. 23—27 (S. A.).
56. LICTHTHEIM, Zur Kenntnis der pernicioesen Anaemie. VI. Kongress f. innere Medicin 1887.
57. LITTEN, Verhandl. d. Gesellsch. der Charite-Aerzte. Berliner klin. Wochenschr. 1892. Nr. 38.
58. LITTEN, Ueber basophile Koernungen in rothen Blutkoerperchen. Deutsche med. Wochenschr. 1899. Nr. 44.
59. LOEWY, A., Ueber die Bindungsverhaeltnisse des Sauerstoffs im menschlichen Blute. Centralblatt f. Physiologie 1899. Bd. 13. Nr. 18.
60. LUSSANA, F., Contributo alla pathogenesi dell' anemia da anchilostomiasi. Rivista clinica 1890. Ref. in Virchow-Hirsch's Jahresberichten 1891. Bd. 1.
61. MARAGLIANO, E., Beitrag zur Pathologie des Blutes. XI. Kongress fuer innere Medicin 1892.
62. MARTI, A., Wie wirken die chemischen Hautreize und Belichtung auf die Bildung der rothen Blutkoerperchen? XV. Kongress f. innere Medicin 1897.
63. MARTIUS, F. (und LUBARSCH, O.), Achylia gastrica, ihre Ursache und ihre Folgen. Leipzig u. Wien 1897.
64a. MAZZONI, cit. nach Battistini u. Rovere (4).
64b. MINNICH, W., Zur Kenntnis der im Verlaufe der pernicioesen Anaemie beobachteten Spinalerkrankungen. Zeitschr. f. klin. Medicin 1892. Bd. 21.
65. MUELLER, H. F., Ueber die atypische Blutbildung bei der progressiven pernicioesen Anaemie. Deutsch. Arch. f. klin. Med. 1893. Bd. 51.
66. MUELLER, FR., Zur Aetiologie der pernicioesen Anaemie. Charite-Annalen 1889. Bd. 14.
67. MOELLER, W., Studier oefver de histologiska foeraendringarna i digestionskanalen vid den pernicioesa anaemin och saerskildt vid bothriocephalus-anaemin. Helsingfors 1897.
68. NEUMANN, E., Ueber Blutregeneration und Blutbildung. Zeitschr. f. klin. Medicin 1881. Bd. 3.
69. NONNE, Beitraege zur Kenntnis der im Verlaufe der pernicioesen Anaemie beobachteten Spinalerkrankungen. Arch. f. Psychiatrie u. Nervenkrankheiten 1893. Bd. 25.
70. v. NOORDEN, C., Verhandl. d. Gesellschaft d. Charite-Aerzte. Berl. klin. Wochenschr. 1892. Nr. 38.
71. v. NOORDEN, C., Untersuchungen ueber schwere Anaemien. Charite-Annalen 1891. Bd. 16. (S. A.)
72. v. NOORDEN, C., Lehrbuch der Pathologie des Stoffwechsels. Berlin 1893.
, Die Bleichsucht. Nothnagel's specielle73. v. NOORDEN, C. chirurgischen Erkrankungen mit besonderer Ruecksicht Pathologie u. Therapie. Bd. 8. Theil 2. Wien 1897.
74. NOTHNAGEL, H., Cirrhotische Verkleinerung des Magens und Schwund der Labdruesen unter dem klinischen Bilde der pernicioesen Anaemie. Deutsch. Arch. f. klin. Medicin 1879. Bd. 24.
75. V. OTT, Ueber den Einfluss der Kochsalzinfusion auf den verbluteten Organismus im Vergleich mit anderen zur Transfusion verwendeten Fluessigkeiten. Virchow's Arch. 1883. Bd. 93.
76. PAPPENHEIM, A., Die Bildung der rothen Blutscheiben. Inaugural-Dissertation. Berlin 1895.
77. PEIPER, E., Zur Symptomatologie der thierischen Parasiten. Deutsche med. Wochenschrift, 1897. Nr. 48.
78. PEPPER, W., Progressive pernicious Anaemia, or Anaematosis. Americ. Journ. of the Med. sciences 1875. Cit. nach EICHHORST (23).
79. PETREN, K., Bidrag till kaennedomen om ryggmaergsfoeraendringar vid pernicioes anaemi. Akademisk afhandling. Stockholm 1895.
80. QUINCKE, H., Weitere Beobachtungen ueber pernicioese Anaemie. Deutsches Arch. f. klin. Medicin 1877. Bd. 20.
81. QUINCKE, H., Zur Pathologie des Blutes. Deutsches Arch. f. klin. Medicin 1890. Bd. 25.
81b. QUINCKE, H., Zur Physiologie und Pathologie des Blutes. Deutsches Arch. f. klin. Medicin 1883. Bd. 33.
82. REYHER, G., Beitraege zur Aetiologie und Heilbarkeit der pernicioesen Anaemie. Deutsch. Arch. f. klin. Medicin 1886. Bd. 39.
83. RIEDER, H., Beitraege zur Kenntnis der Leukocytose. Leipzig 1892.
84. RINLFLEISCH, G. E., Ueber Knochenmark und Blutbildung. Arch. f. mikroskopische Anatomie 1880. Bd. 17.
86. RUNEBERG, J. W., Zur Kenntnis der sog. progressiven pernicioesen Anaemie. Deutsch. Arch. f. klin. Med. 1881. Bd. 28.
86. RUNEBERG, J. W., Bothriocephalus latus und pernicioese Anaemie. Deutsch. Arch. f. klin. Medicin 1887. Bd. 41.
87. SANDOZ, Beitrag zur Pathologie und Therapie der pernicioesen Anaemie. Korrespondenzblatt f. Schweizer Aerzte 1887. Nr. 17.
88. SCHAPIRO, H., Heilung der Biermer'schen pernicioesen Anaemie durch Abtreibung von Bothriocephalus latus. Zeitschr. f. klin. Medicin 1888. Bd. 13.
89. SCHAUMAN, O., Zur Kenntnis der sog. Bothriocephalus-Anaemie. Berlin 1894.
90. SCHAUMAN, O., u. ROSENQVIST, E., Ueber die Natur der Blutveraenderungen im Hoehenklima. Zeitschr. f. klin. Medicin 1898. Bd. 35.
91. SCHAUMAN, O. u. TALLQVIST, T. W., Ueber die blutkoerperchenaufloesenden Eigenschaften des breiten Bandwurms. Deutsche med. Wochenschr. 1898. Nr. 20.
92. SCHAUMAN, O. u. v. WILLEBRAND, E., Einige Bemerkungen ueber die Blutregeneration bei der Chlorose. Berliner klin. Wochenschr. 1899. Nr. 1 u. 3.
93. SILBERMANN, O., Zur Pathogenese der essentiellen Anaemien. Berliner klin. Wochenschr. 1886. Nr. 29 u. 30.
94. SINKLER and ESHNER, Three cases of essential anaemia in one family. American Journal of med. science 1896.
95. STADELMANN, E., Der Ikterus. Stuttgart 1891.
96. STOCKMAN, R., Remarks on the Analysis of iron in the liver and spleen in various diseases affecting the blood. British Medical Journal, 1896. Mai 2. (S. A.).
97. STRAUSS, H., Verhandl. des Vereins f. innere Medicin in Berlin. Berliner klin. Wochenschr. 1899. Nr. 45.
98. STRUEMPELL, A., Lehrhuch d. spec. Path. u. Therapie d. inneren Krankheiten. Leipzig 1896.
99. TALLQVIST, T. W., Ueber experimentelle Blutgift-Anaemien. Berlin 1900.
100. TIMOFEJEWSKY, D. J., Zur Frage ueber die Regeneration der rothen Blutkoerperchen. Centralbl. f. allg. Path. u. path. Anat. 1895. Bd. 6.
101. V. VOSS, G., Anatomische und experimentelle Untersuchungen ueber die Rueckenmarksveraenderungen bei Anaemie. Deutsches Archiv. f. klin. Medicin 1897. Bd. 58.
102. WARFVINGE, F. W., Om arsenik som laekemedel mot pernicioes progressiv anaemi. Hygiea 1900. Nr. 1 u. 3.
103. v. Willebrand, E. A., Zur Kentniss der Blutveraenderungen nach Aderlaessen. Berlin 1900.
104. ZAPPERT, J., Neuerliche Beobachtungen ueber das Vorkommen des Ankylostomum duodenale bei den Bergleuten. Wiener klin. Wochenschr. 1892. Nr. 24.
105. ZUNTZ, N., Deutsche med. Wochenschr 1899. Nr. 1 (Litteraturbeilage).

A CONTRIBUTION TO THE THERAPY OF THE SUPRARENALS.

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So-called medical conservatism is often an excuse for ignorance, unwillingness for mental and physical effort, or love of contrariness. Could this be better illustrated than by the idle, persistent, and certainly uncalled-for opposition to diphtheria antitoxin which to this day we find occasionally in the medical press even of our own city? How this is possible seems almost incredible to those who have had the opportunity of frequently observing the marvellously good results that are obtained from antitoxin. Only sheer stubbornness and unwillingness to test its value until the patient lies gasping almost his last breath can explain such conduct to any medical man with normal cerebration and power of observation. Many similar examples might be cited, as, for instance, the Brandt baths for typhoid and hyperpyrexias in general. Organotherapy, or the employment of animal extracts, is another instance in which the conservative element of the profession scoffs at those who are eager to take advantage of the progress of medical science. When the eminent Brown-Sequard, in his old age, with characteristic French enthusiasm, first heralded the orchitic juice as *the* fountain of eternal youth, *the* aqua vitæ indeed, telling of the wonderful effects its hypodermatic injection had in his own case, and following this up by the elaboration of the theory of the internal secretion of glands, and by the attempt to introduce the extracts, not only of glands in general, but of most of the specialized tissues of the animal body—the brain, kidney, lungs, etc.—the whole medical world became more or less infected with his ardor, and rushed eagerly at specific parts of organotherapy—to the especial delight of a horde of unscrupulous fakirs and unscientific, mercenary,

so-called manufacturers, with the natural sequence that all organotherapy soon enough fell into disrepute.

When, however, we call to mind that at that time bacteriology was an unborn fact, and that even pathological chemistry was in its infancy—from which state, by the way, it is now but commencing its ascent towards its future undoubted greatness—we can well see the error of condemning organotherapy from these early trials. The chemistry of ptomaines and leucomaines is of very recent origin and is still very incomplete; and when we recall that glandular extracts and their alkaloids come under that heading, we must admire the zeal and patience of those few who persisted in their faith in the therapeutic possibilities of the animal glands. It is true that they were spurred on in their efforts by the fact that the thyroid gland given by mouth was found to produce uniformly good results in conditions of athyroidism—as cretinism—and showed specific and well-marked therapeutic activity. Reputable manufacturers, employing skilled and scientific staffs, versed in both chemistry and bacteriology, then began to collect under strictly aseptic circumstances the various fresh glands, from which either sterile glycerin extracts were prepared, or else the fresh glands were simply desiccated and powdered. Gradually it was found that the active leucomaines easily combined with sodium chloride, forming soluble, diffusible, double salts; and, in some instances, the fresh juice, after having its inert albumens eliminated, was standardized. Finally, Professor Alexander Poehl, of St. Petersburg, who has been untiring in his enthusiasm and labors in this line, succeeded in isolating the active principle from the orchitic juice, and obtaining definite, crystallizable salts, with various acids, which salts have reactions peculiar and characteristic to themselves, besides possessing specific, tonic, therapeutic properties. That wonderful country Japan, too, through its eminent son, the chemist Dr. Jokichi Takamine, has recently contributed even to this field of the world's progress by isolating the active principle of the suprarenals, which he calls adrenalin.

This substance is a white, micro-crystalline, stable substance of slightly alkaline reaction, somewhat soluble in cold, but more readily in hot water, from which the crystals separate on cooling. It has a series of distinct reactions, the most characteristic being when ferric chloride is added to a solution of adrenalin, the result being the production of a beautiful emerald green color, which again on the addition of caustic alkali changes first to purple and then to carmine. It unites with various acids, such as hydrochloric, sulphuric and benzoic, forming deliquescent salts. Physiological experiments upon dogs have proved that the solution of hydrochloride of adrenalin has very pronounced therapeutic action, similar to that of the best suprarenal extracts. Dr. Takamine claims that comparative tests have demonstrated that it is more than one thousand times more effective than the best fresh extracts. Be that as it may, this can certainly be said that the solution of the hydrochloride salt of adrenalin, as obtained at the druggist's, is a stable, permanent and aseptic solution, which cannot be said of the so-called extracts of the suprarenals, which deteriorate quickly, are of variable physiological activity,—according no doubt to age, mode of preparation, etc. Another drawback in the case of the suprarenal extracts is that one has to prepare a fresh solution, or rather emulsion, each time it is required for use; and even then one can have no certainty of its sterility. Personally I should certainly never dare to use any of the commercial organic extracts for hypodermatic or intrauterine injections, or for sterile wounds. There is furthermore the disadvantage that when these extracts are used the dose cannot be exactly graduated. All these disadvantages are done away with by the use of aseptic, stable, adrenalin solutions of definite strength, now to be obtained everywhere; and I think Dr. Takamine deserves praise and gratitude, as well as wishes for further successes in the same line. Personally I should be very much pleased if we could now get a preparation similar to, but cheaper than Professor Poehl's spermin, which to my mind is of great therapeutic value, though its present prohibitive price often prevents its use. The thyroid and perhaps other organs also offer further fields for the attention of physiological chemists.

To return, however, to the suprarenals. There is hardly any call to sing their praises as astringents, hemostatics or cardiac tonics, because—at all events in New York City—ophthalmologists, laryngologists, surgeons and all progressive and up-to-date general practitioners are well acquainted with their use. My own first experience with the extract of the suprarenals as a hemostatic and astringent was acquired in the year 1899, while I was House Surgeon at the City Hospital, where the attending laryngologist, Dr. Francis Quinlan, demonstrated its marvellous effectiveness in nose and throat work. Ever since that time I have used it, not only in every operation on the nose and throat, but also in every case of epistaxis, hay fever, and tonsillitis that has come under my observation; and, besides the external application, I have been in the habit of prescribing the extract internally in acute stages of the same diseases. Thereby I have found, a more lasting effect is obtained than by daily or twice-daily applications. Since adrenalin solutions have appeared on the market, I have had equally excellent results with them and with less trouble; and the solutions have likewise proved of splendid service in acute conjunctivitis, urethritis, etc.

A few cases may be cited at random to show the different conditions in which either the aqueous solution of the suprarenal extract or adrenalin solution has been of excellent service:

CASE 1.—Mrs. K., about forty years of age, had for some months had repeated attacks of epistaxis. No other cause for these could be found than approach of the period of the menapause and some irregular menses; heart, lungs, liver, nose and throat seemed normal. As, however, the repeated hemorrhages not only alarmed the patient and family, but left her weak and seemingly anemic, my services were solicited. After clearing out the nose as well as possible, I swabbed it out thoroughly with the freshly prepared suprarenal emulsion. The hemorrhage was rapidly subdued, and five grains suprarenal extract were ordered, at first every two hours, then every three to four hours. No recurrence has happened.

CASE 2.—Miss M., 25 years of age, had had repeated at-

tacks of amygdalitis. Her pharynx is naturally narrow, and as she positively refused tonsillotomy notwithstanding extreme hypertrophy of both tonsils, there was almost complete occlusion whenever the attack came on, making the routine swabbing out with tincture of iodine extremely painful and unpleasant. As, however, iodine acts splendidly not only in the way of killing the bacteria but also by neutralizing their toxin (besides exercising great power of penetration) I am in the habit of first cleansing the tonsils by H_2O_2, then spraying or swabbing out with adrenalin solution, and finally swabbing with tincture of iodine. The swollen glands contract, and the congestion is reduced by the adrenalin, while the application of iodine is far less unpleasant. In addition to this the administration of suprarenal extract by mouth, with small, repeated doses of sodium salicylate and tincture of aconite, will soon manage the worst case—at least the worst that has come within my experience. It may be well to add that in cases of acute amygdalitis with hyperpyrexia, and its coincidental rapid and more or less weak pulse, the pulse is improved in quality and its rate reduced by internal administration of the suprarenal. In no case have any unpleasant effects been observed.

CASE 3.—Mrs. B., about thirty years of age, suffering from general "cold," i. e. bronchitis, laryngitis, and acute coryza. Besides external cold applications to the throat at night, terpin hydrate and codein were given every two hours by mouth, together with small doses of aconite and belladonna. The swollen nasal mucosa, with its thin watery discharge, making nasal breathing an impossibility, troubled the patient considerably. This was remedied by first cleansing the nose with salt solutions, after which adrenalin solution 1:5000 was used as a spray, which procedure was repeated in about two hours, the result being that the patient's comfort was considerably increased. The patient at first used too much of the adrenalin solution, whereupon cephalalgia ensued. This, however, was avoided afterwards by curtailing the amount of spray.

It may suffice to add that in several cases of tonsillotomy the hemorrhage has been entirely controlled by adrenalin solution, which has proved equally effective as a hemostatic in several cases of minor surgery that have come under my care.

ICHTHYOL IN TUBERCULOSIS,*

By CHARLES T. SPANGLER, M. D.,

of Kane, Pa.

It is doubtful if any climate can be so perfect that it will not bear some additional means of enhancing its efficiency. While it is true, tuberculous patients occasionally recover by depending upon climate influence alone, in the sense of roughing it or listlessly communing with nature, these can be considered as the selective, fortunate few, favored by temperament and otherwise, who are destined to improve under any favorable environment. The trend of the great majority pursuing a similar course is to display a measure of improvement for a time, remain stationary, or lapse into a state of more or less rapid retrogression.

The experience of the last three seasons shows that patients do not respond satisfactorily to the routine treatment of creasote or its derivatives in this section of the Alleghenies. Nearly all patients came to the mountains for the purpose of testing the climate unaided, or to continue the creasote treatment instituted previously. After several weeks the slow progress experienced demonstrated the insufficiency of the plan, and the introduction of ichthyol to the treatment resulted, in many instances, in an improvement so marked that the method has been exclusively adhered to in all cases treated during that period.

Among the few who were not amenable to the discipline imposed by reason of devoting the major portion of the twenty-four hours exposed to the dust and other contaminations of the busy thoroughfares, it has been my impression that the benefit derived in these instances was due more to the ichthyol, in addition to the mental effect of mere change of locality, than from any climatic influence, *per se*.

Nature does not generate a pure health-giving air amid the bustle of business traffic in any community, nor does it enter the dwelling place in such environment in search of the distressed, but out in the open country it beckons a welcome, where all in need may find succor, exemplifying the rule "that the thickly populated centres are to be avoided," which applies as forcibly to Kane as to all other health districts.

In the number who were not able to take advantage of the climate for more than a few months it has been observed that the ichthyol, continued under the most favorable conditions in the home environment, resulted in a prolonged extension of the improvement.

Ichthyol possesses a wide range of therapeutic utility by reason of the innoxious form of sulphur contained in its composition. It is acceptable to the stomach, promoting its function; is readily absorbed by the alimentary mucosæ, and when administered in quantity in turn eliminated by the mucous surfaces in general. In the tissues it possesses, to a high degree, the property of stimulating that function of protoplasmic life concerned in constructive metabolism, resulting in an increase in bodily weight, and, aside from the local impression exerted through the process of elimination, accomplishes its chief curative value in tubercular and other forms of wasting disease through this reconstructive property.

The chief objection to its use is the odor, taste, and eructations, which are neutralized to a considerable extent by the use of capsules. In deference to the objectionable features, I, several years ago, abandoned the custom in vogue of administering the solution in ascending doses, reserving this method for the variety of cases in which the upper air passages are involved, for the purpose of securing the impression from contact in the act of deglutition.

The plan most generally acceptable has been to begin with a No. 1 empty capsule (filled by the patient) after each meal for the first week, adding another to each dose during the second, and a third to each dose the third week. This dosage is maintained indefinitely, and presents the advantage of attaining the maximum degree of tolerance in the shortest time.

If discomfort arises from the eructations the interval between each dose is apportioned to afford ample time for complete appropriation before another is introduced. This is provided for by giving the capsules after breakfast and at bed-hour. Each individual temperament throughout the treatment suggests or determines the most appropriate and

*Read by invitation, before the Philadelphia County Medical Society, December 11, 1901.

effective arrangement of the dosage, and the ability to prolong the treatment indefinitely is dependent upon the delicacy of this adjustment. For in the application of ichthyol, as of any other remedy, a greater degree of harmony can be maintained by having an elastic mode of administration rather than an inflexible method or technique, and endeavor to compel the varied temperaments to conform to it.

During the first week of the treatment little or no appreciable effect is noticeable in the chest symptoms; after that time, however, a gradual impression becomes manifest. The cough paroxysms lessen in itensity and frequency, the expectoration becomes more profuse, and the sputum loses a measure of its density. Proportionately to the amelioration of local symptoms the appetite improves, and there is usually a marked weekly gain in weight.

Notwithstanding its exceptional service in the chronic forms of the disease, experience proves it of little value in the acute complications. If, at any time, the progress of the improvement is interrupted by the intervention of a pleuritic or pneumonic attack, which, unfortunately, too frequently occurs in this latitude, the ichthyol is suspended until the acute symptoms subside, when it is again resumed. These complications yield most readily to guaiacol carbonates, thiacol, or phenol hypodermatically. The latter reserved for the cases associated with gastric or intestinal irritability, in which the aversion to food or medicine precludes treatment by that channel. During the early months strychnia in supporting doses has proven a valuable adjunct to the treatment of many cases.

Considering its availability from the view-point of existing conditions, climatic treatment is a luxury only attainable by a small percentage of cases, and until sanatoria are provided by legislation or private philanthropy to accommodate the poorer patients in our communities, who, by their environment, contribute a daily quota to an already congested volume, any improvement in the condition of this class is dependent upon the benevolent inclination of the physician. I would suggest, therefore, that all cases of obstinate cough or persistent irritation of the upper air passages, particularly when following an attack of grippe, pneumonia, or typhoid fever, be placed upon ichthyol and appropriate habit discipline.

Obstinacy in itself is sufficiently suggestive of the suspicious tendency, and since it is well known that the result of treatment is slow at best, why delay the antitubercular measures until the disease has advanced into the stage when its presence is clearly asserted by well-defined clinical features? Why not reverse the customary rule, institute treatment in the pretubercular stage, and extend to the patient the benefit of the doubt? This procedure would prove most effective as a practical commonsense source of elimination on safe lines, materially diminishing the number who ultimately need change of climate. Urge the patient to live in the best available atmosphere; to sleep alone in clean, well-ventilated, carpetless rooms; judiciously to practice upper-waist calisthenics regularly every morning, with moderate deep-breathing exercise when in the fresh air, and there will be much less ill results to record from failure to recognize tuberculosis in its earliest incipiency; and in the event of recovery a substantial barrier will be maintained against recurrence.

CASE I.—S. N., a Philadelphia bank clerk, white, eighteen years of age, began to cough in November, 1900. This symptom gradually became associated with marked dyspnea, hectic, night-sweats, moderate hemorrhages, and tubercle bacilli. He was treated during the winter with guaiacol and thiacol, which evidently succeeded in restraining the advancement of the disease. He came to Kane early in April, and had a slight hemorrhage the first week. An examination revealed both apices to be implicated. He was placed upon ichthyol, and has continued its use since. Early in June the improvement was such that I yielded to his desire to visit Mount Pocono, where he spent the remainder of the season. In a recent letter he reports having been examined several times during August by Dr. Evans, of Philadelphia, who, with the exception of a slight cough, failed to detect any local signs.

CASE 2.—F. P., a Philadelphia student, white, nineteen years of age, began to cough two years ago. He came to Kane last July with marked dyspnea, night sweats, emaciation, bacilli, and evidence of infiltration in both apices and the right middle lobe. He returned to his home last week with a marked improvement in the local condition and a gain in weight of eleven pounds.

CASE 3.—James M., a night railroad employé, of Williamsport, white, thirty-seven years of age, coughed for three years as a consequence of repeated colds, due to exposure. The cough paroxysms gradually increased, the expectoration became more profuse, with dyspnea, hectic, night-sweats,emaciation, bacilli, and frequent hemorrhages. He came to Kane early in June. I found infiltration in the left apex and generally throughout the right lung. He returned to work in September, having gained twenty-two pounds, and reports not having any inconvenience.

CASE 4.—J. F., a clergyman of Kane, white, forty-six years of age, has coughed since an attack of la grippe in January, 1901. He exhibited hectic, night-sweats, emaciation, bacilli, and infiltraton in both apices and in the right middle lobe. He began taking ichthyol in April. In a recent examination there was absence of any local lesion. He has regained the lost weight and energy, and has resumed his clerical duties.

CASE 5.—C. L., a carpenter, of York, white, thirty-eight years of age. His cough began in May, following an attack of pleurisy. He came to Kane early in September. Examination revealed infiltration in the right apex and the right middle lobe, with bacilli. He has improved steadily, having gained ten pounds, and is anxious to return to work.

CASE 6.—C. R., a bookkeeper, of Kane, white, thirty-five years of age. Trouble dates from an attack of la grippe in February. Infiltration of the right apex exists, and also of the middle lobe, with bacillus. He returned to work in October, having fully recovered.

CASE 7.—J. C., an Italian, of Kane, is forty-two years of age. Cough followed an attack of pneumonia last winter. There were marked dyspnea, hectic, night-sweats, emaciation, and bacilli in abundance. The left apex and the left lung were generally infiltrated. He continued the ichthyol during the spring and summer months, returning to work in October, greatly improved.

CASE 8.—Mrs. K., of Kane, white, forty-five years of age. Her cough began in October, 1900, subsequent to an attack of la grippe. An examination in April revealed infiltration of the right lobe generally; there were bacilli, marked emaciation, and debility. In September she was able to resume her usual household duties, with only a trace of the local condition discernable.

Abstracts of Therapeutic Literature.

DERMATOLOGY.

A Case of Dermatitis Gangrenosa.—J. M. Finny reports a case of this disease in the *Dublin Journal of Medical Sciences*, December, 1901. The patient, aged two years and nine months, suffered from a number of punched-out circular sores on the face and hairy scalp, and a few similar though larger ulcers on the backs of the wrists, and on the nates. On admission the sores were covered with a greenish yellow pus, and in one or two only was the pus raised above the edge of the ulcer. After the application of a creolin poultice, the floor of the sores was quite clean ond of a deep red color, with the edges sharply cut, of a similar red color, which was strictly limited to its immediate neighborhood. Most of the ulcers were discrete, although a very narrow strip of healthy skin intervened, but on the forehead, above the right eye, on the right cheek, and on the left eyelid two adjoining ulcers coalesced, forming an irregular gyrate outline made of two circles meeting. The treatment consisted in giving as much nourishment as could be taken, and of washing with creolin, applying boric acid poultices, dusting the sores with iodoform, and applying a weak ichthyol and lanoline ointment to the eyes. The eyelids in this case were enormously swollen and adherent, and they could not be opened so as do examine the eyes. No improvement followed treatment, and no pus was discharged. There was no evidence of healing, and the skin surrounding the sores on the wrist and hip became deeper and more purplish. The case had a fatal termination.

TOXICOLOGY.

Bismuth Poisoning.—F. Mühlig (*Münch. med. Woch.*, 1901, No. 15). The following cases were observed in the German Hospital in Constantinople: H. W., 26 years of age, while washing gloves with benzine on December 24, 1899, received severe burns on both arms and hands. In addition to the palliative treatment of the wounds, after a few days subnitrate of bismuth was employed. On January 5, 1900, there was slight salivation and a bluish black line upon the gums. On January 10, 1900, the whole buccal membrane, the tongue, the arches of the palate and the uvula were discolored a bluish gray, swollen, and showed small superficial losses of substance. The salivation now increased, and the mouth could only be opened and closed with great pain. The general condition remained good, and the urine showed nothing abnormal. Although the bismuth was no longer applied after the first symptoms of stomatitis and the wounds then enclosed with a moist dressing, improvement only occurred after the bismuth-covered granulations in the wound had been curetted. On February 2, 1900, the stomatis disappeared, as did also soon the grayish discoloration of the gums. The teeth themselves had not suffered. The second case was as follows: J. B. H., 34 years of age, burned himself on November 8, 1900, with hot water upon both ankles and feet. The same treatment as in the previous cases was employed. On November 30, 1900, a fetid breath was observed, marked salivation and a bluish discoloration of the gums and the soft palate. Furthermore, superficial ulcerations of the tongue and arch of the palate, and marked difficulty of swallowing. The urine and bowels were normal. In this case also a curettemrnt had to be done in order to bring about improvement and cure. The bismuth in each of the cases was from a different sample, and both of the samples came from two very reputable factories in Germany. Both preparations were examined and an accurate analysis showed that both samples were pure. The author states that according to these facts the bismuth, in contraindication to the general supposition, is not an entirely indifferent remedy, and even when applied externally, a certain amount of caution ought to be exercised.

A Case of Bismuth Poisoning.—Dr. Frederick P. Henry, in a communication to the *Jour. Amer. Med. Ass'n*, Dec. 7, 1901, gives the following interesting case of poisoning by bismuth: Several years ago there was a patient in the Woman's Hospital in Philadelphia with an extensive burn of one arm, over which bismuth subnitrate had been thickly dusted. The powder had united with the secretions of ulcerated surface and formed a thick "cast" like that of plaster of Paris. The patient developed acute stomatitis characterized by great pain, tenderness and swelling, and broad bluish lines along the edges of the teeth, and the inner borders of the lips. He has no record of the case, and can only state that the patient fell into a state of profound asthenia and died from what he regarded as bismuth poisoning. The United States Dispensatory (18th Ed., p. 275) states that the insoluble preparations of bismuth "when applied in large quantities to extensive wounded surfaces are capable of yielding so much bismuth by absorption as to produce a poisoning which is characterized by acute stomatitis, with a peculiar black discoloration of the mucous membrane, usually beginning upon the borders of the teeth, but spreading over the whole mouth. followed by an intestinal catarrh, with pain and diarrhea; in severe cases, desquamative nephritis, as shown by albuminous urine and epithelial tube casts, may also occur." Although the authority for this statement is not explicitly stated, it is evidently taken from Kocher, who wrote upon the subject in 1882, and who is quoted in the paper on bismuth poisoning by Dreesmann, upon which the editorial above referred to was based.

DISEASES OF THE EYE, EAR, NOSE AND THROAT.

The Treatment of Trachoma With Sublimate-Glycerine.—J. Gamtschuk (*Wojeno-medic. Journal*, 1901, Januar) states that the treatment of trachoma with copper requires considerable time, is also very painful and spares the epithelium of the conjunctiva but little. The author has employed the sublimate-glycerine in 486 cases of marked trachoma and obtained the best results. He employs a solution of 0.1 of bichloride of mercury in 25.0 of glycerine and applies it with cotton upon a probe, to the everted lids. The applications are made every fifth day and in some instances every second day. A burning sensation results after the application, which however does not last longer at the most than one-half hour, after which the patients may resume their occupations. On the day following the applications the author employs zinc solution, with cocaine, and in cases in which there is much secretion, two to three per cent. silver nitrate solutions, followed by irrigation with normal salt solution. Under this treatment no complications of the cornea occurred in spite of the cicatrices already present before treatment. 55.7% of the cases recovered, while a marked improvement was observed in the balance. The author believes that in addition to its antiseptic power, the corrosive sublimate causes a hyperemia of the conjunctiva and therefore an increased metabolism in the tissues, which in turn causes a quick disintegration and absorption of the trachoma lesions.

The Treatment of Catarrhal Processes in the Middle Ear by Intratubular Pilocarpin Injections.—Fischenich (*Berliner klinische Woch.*, November 12, 1900, No. 46) recommends the employment of a 2% aqueous solution of pilocarpin muriate as an injection for catarrhal adhesive processes in the middle ear. The dose varies from 6 to 16 drops, and is often followed by dizziness, which only lasts for a brief period. The acoustic acuity may even increase after treatment has been stopped. The injections are made with a catheter in the usual manner, and may have to be repeated 30 to 50 times. The author's experience of this treatment extends over 45 years and embraces 120 cases so treated. The invariable result of injection is marked dizziness and occasionally slight pain at the beginning of the procedure. The patient should therefore not be sent away immediately after the manipulation but should be placed in a horizontal posture until all symptoms have disappeared. Occasionally the acuity of hearing is dimin-

ished after the injections, and therefore air inflation should be practiced for eight days before making a comparative test of the hearing, in order that all the fluid may disappear. The author has obtained exceptionally good results from this treatment in cases of sclerosis occurring in individuals suffering from advanced chlorotic processes. Various opinions are entertained about the action of the pilocarpin in these cases, the author claiming that the drug possesses a specific power within the middle ear.

The Treatment of Strabismus.—J. Morrison Ray discusses the cosmetic and visual results of treatment for squint in the *Jour. Amer. Med. Ass'n*, (Nov. 2, 1901). The following conclusions are drawn: (1) The effect gained in the treatment of strabismus, whether parallelism of the visual axes be obtained by a cyclopegic,, glasses, orthoptic exercises, or an operation, is largely, or we might say wholly, cosmetic; (2) glasses should be adjusted to the eyes of squinting children at as early an age as possible, depending upon the ability of the parent to control the child: and they should always be worn for a sufficient length of time to determine their effect upon convergence before any steps in the way of an operation are undertaken; (3) the use of the exclusion pad and orthoptic training are advisable, not so much in the hope of increasing the vision in the squinting eye as to improve the power of coordination in the recti muscles, so that when the child reaches the proper age for operation the power of simultaneous muscle action will not have been lost; (4) binocular single vision is not present in more than 7 per cent. of cases of squint, and its production in a larger percentage uncertain and unsatisfactory. Parallelism of the visual lines does not mean binocular single seeing; (5) double images are not necessary for a successful issue. Cosmetic result can be obtained and maintained where the fusion power is absent. This is true in monocular squint with great amblyopia as well as in the alternating form; (6) congenital amblyopia is often found in the eyes that do not squint, especially combined with hypermetropia and astigmatism, and often in members of a family where squint in others is present; (7) in alternating squint, if the hypermetropia is of a high degree, the changes for producing parallelism are better than when the hypermetropia is low. In alternating squint with hypermetropia of a medium degree the necessity for an operation and the difficulties of producing parallelism by tenotomy are greater than in monolateral squint; (8) the effect of tenotomy is greatly influenced by the amount of abducting power present in the corresponding externus. This should always be especially noted in the alternating variety; (9) two tenotomies on the same internus is bad surgery, since it invariably leaves a sunken caruncle and later divergence; (10) from a cosmetic standpoint the correction by operation is not as simple as might be supposed. What is gained by straightening the eye, if there is left a noticeable exophthalmos with limited motion of the eye both outward and inward?

The Treatment of Pannus with the Thermocautery.—Dr. J. Hamburger, of Lemberg, (*La Semaine Medicale*, Oct. 23, 1901) reports five cases of rebellious pannus in which he obtained good results by employing the thermocautery in the following manner. Preliminary treatment consists in placing the patient upon a couch and insert in the eye a 3 per cent. solution of cocain; then introducing under the eyelid a straight knife, and a globe having been previously immobilized by means of forceps held by the assistants. The point of the thermocautery is brought close to the pannus and subjected to the radiant rays of the instrument, direct contact being carefully avoided. The point of the cautery is applied over the level of the corneal limbus in order to divide the nourishing vessels of the pannus. This having been done, instillation of atropin follows. The region is covered with iodoform powder, and a light dressing is placed over the eye.

The Treatment of Acute Laryngitis Due to Exposure, with Menthol Fumes.—Susdalsky (*Wojeno-medic. Journal*, December 19) claims that in his experience menthol proved itself the best symptomatic treatment for acute laryngitis depending upon exposure. Although, as is well known, many laryngitides disappear of themselves, there are nevertheless very obstinate cases of this infection when the most energetic treatment often futile. The author treated with menthol 23 such cases occurring among young soldiers, in whom the laryngeal mirror showed a hyperemia of the vocal cords and occasionally punctate hemorrhages or slight thickening of the margin of the bands. The patients complained of cough, pain in the throat, hoarseness and occasionally also pain in the chest. The earlier that the patient was treated, the less treatment with menthol fumes was required, the average treatment when the disease was treated from the first to the second day, was from three to four days, and in those cases from the fifth to the seventh day about six days.

Bromide and Iodide of Strontium in Exophthalmic Goitre.—Prof. Laborade entertains a high opinion of the bromide and iodide of strontium in the treatment of exophthalmic goitre. A. Lockhart Gillespie has recently also employed them with success in the treatment of this disease in children, and finds that morbid symptoms yield to this therapy without the evidences of iodidsm or bromidsm. The swelling and pulsations of the thyroid gland are rapidly mitigated, and frequently tachycardia tends to disappear.

PEDIATRICS.

The Preservation of the Teeth of School Children.—The Journal of the British Dental Association (says the *Practitioner*, December, 1901) publishes the following rules recommended by the School Children's Committee of the British Dental Association, and circulated for the information of managers and teachers of national schools in Ireland: Without good teeth there cannot be good mastication. Without thorough mastication there cannot be perfect digestion, and poor health results. Hence the paramount importance of sound teeth. Clean teeth do not decay. The importance of a sound first set of teeth is as great to the child as a sound second set it to the adult. Children should be taught to use the tooth-brush early. Food left on the teeth ferments, and the acid formed produces decay. Decay leads in time to pain and the total destruction of the tooth. The substance of the following rules should therefore be impressed constantly upon all children: (2) The teeth should be cleansed at least once daily. (2) The best time to clean teeth is after the last meal. (3) A small toothbrush, with stiff bristles, should be used, brushing up and down and across, and inside and outside, and in between the teeth. (4) A simple tooth powder, or a little soap, and some precipitated chalk taken up on the brush may be used if the teeth are dirty or stained. (5) It is a good practice to rinse the mouth out after every meal. (6) All rough usage of the teeth, such as cracking nuts, biting thread, etc., should be avoided, but the proper use of the teeth in chewing is good for them. When decay occurs it should be attended to long before any pain results. It is stopping of a small cavity that is of the greatest service. In 10,000 children's mouths examined, 86 out of every hundred required skilled operative treatment.

DRUG HABITS.

The Therapeutic Treatment of Alcoholic Inebrity.—J. M. French, in a paper on this subject in *Merck's Archives*, (October, 1901), states that the objects to be aimed at in the treatment of alcohol inebrity are four in number: (1) To break up the habit of drinking. As this is the prime cause of inebrity, its removal is of the first importance; (2) to remove the morbid craving for drink. This may be considered as the first step in the actual cure, the other being merely preparatory. A man may be kept from drinking by being confined in prison where he cannot get liquor, and still be an inebriate, as is proved by the promptness with which he gets drunk on being released. Or he may keep from drinking by his own force of will, and so long as the craving remains he may be regarded as a reformed drunkard, but certainly not as a cured one. On the other hand the man who can drink moderately, and continue so to drink without ever being driven to excess—if any such man there be—is not an inebriate, even though he may be a regular drinker; (3) to free the system from the effects of drink. In advanced cases, no doubt, this is impossible in the fullest extent, just as a tuberculized lung cannot be wholly restored to its normal condition, or a sloughing ulcer healed without leaving scar tissue. But

that does not prevent the possibility of a practical cure in either case; (4) all these may be secured, and yet be of little permanent value unless the will, the purpose, the moral nature of the man can be reached and influenced for good, unless new ideals can be substituted in place of the old ones, and the man lifted out of the sense-plane upon which he has been living, and made to live for some higher motive than appetite or passion. While this is beyond the reach of drug therapeutics, it is yet the sine qua non of successful treatment. The first of these has for its object the breaking up of the habit of drinking, and the removal of the craving for drink. The time occupied by this stage varies widely in different subjects and under different methods of treatment, but in the author's experience the usual range is from three to ten days. The second stage is almost equally important. It has for its object the building up of the general health of the patient, and his restoration to a normal condition as far as possible. This stage lasts during the remainder of the time in which the patient is directly under the doctor's care, whether it be for weeks or months. The third is the post-active stage, in which the patient directs his own treatment. He is now thrown upon his own resources. Treatment, as a rule, can be well carried out in a well managed sanatorium. Favorable conditions are absolutely essential to obtain good results in treatment. As to medical measures it is necessary to discover a substitute for alcohol which will oppose its effects throughout the whole sphere of its action, and it is further necessary that all the eliminatives should be stimulated to activity. The first of these indications is well fulfilled by strychnine, supplemented by atropine. Apomorphine holds an important, but subordinate, place in the treatment of alcoholic inebrity. It is useful, when a patient is brought in intoxicated, for emptying the stomach of alcohol and sobering him up. It is of value in extreme cases, which resist the usual remedies and refuse to give up their cups, to produce nausea and disgust at the sight, smell, and taste of liquor. Of internal medication, a simple, bitter tonic is the chief essential, and this may contain cinchona, in the form of tincture, elixir or fluid extract, as the base. As a considerable proportion of alcoholics are also syphilitics, it is well to make provision for this element in the treatment.

HYDROPHOBIA.

Laboratory Observations on Hydrophobia in Ohio.—A. P. Ohlmacher (*Jour. Amer. Med. Ass'n.* Nov. 30, 1901) states that during the past five years several cases of suspected hydrophobia have been brought to his notice from various quarters of the State of Ohio, and he records a condensed account of them. His summary is as follows: (1) Four instances in which human beings were bitten by dogs suspected of rabies were tested by laboratory methods with positive results in two. All patients were given the preventive treatment; (2) in three cases the patients were treated at the Chicago Pasteur Institute, and here the only one positive by laboratory test died of rabies in the midst of treatment, presumably because the inauguration of treatment was somewhat delayed and because the incubation was remarkably short; (3) in the fourth case, conclusively demonstrated as rabies in the laboratory, the patients were promptly treated in the Pasteur Department of the Baltimore City Hospital, and they have given no evidence of the disease six months after having been bitten.

The Clinical Treatment of Inebriety.—Dr. T. D. Crothers (*International Clinics*, Vol. III, Eleventh Series, 1901) concludes an authoritative article on this subject as follows: First, the inebriate is suffering from both a neurosis and a psychosis, and is curable at some stage or another of his disease. In all events, he can be helped. Second, the conditions requiring treatment are poisoning, starvation, and exhaustion. Third, the methods to reach these conditions are included in the following: Elimination by the skin, bowels, and kidneys, rest of nerves and brain, and building up. Fourth, mental and physical treatment which has for its purpose to rest and divert the mind and break up the conditions which have grown out of the past. Fifth, a study of the exciting causes with the object of removing them or preventing or diminishing their power and influence. Sixth, the treatment of the conditions which have grown out of the use of alcohol and drugs so as to restore health and vigor and enable the patient to live along normal lines in the future. Seventh, this treatment and the therapeutic remedies needed to carry it out will vary with the man and his circumstances.

INFECTIOUS DISEASES.

The Dietetic Treatment of Enteric Fever.—E. S. Timen (*Therapie der Gegenwart*, 7.Juli, 1901). In 1898 the author had 96 cases of typhoid fever under his care. 14 of these died, and if there are deducted three cases which were brought in a hopeless condition to the hospital, the mortality was 10.9%. The treatment instituted was as follows: After the admission of the patients into the hospital they were given a bath from 27% to 28% R. Where there were marked cerebral manifestations, an ice bag was placed upon their heads, and later the patients twice daily were sponged with vinegar and water, while the mouth and tongue were washed with a 2% boric acid solution and tincture of myrrh. When marked meteorism and coated tongue existed, calomel or castor oil were administered. The bronchitis was combated with baths from 26% to 27% R. and cold ablutions to the neck. In addition baths were given, generally between five and six o'clock in the evening, when there occurred marked nervous manifestations, pulmonary congestion, atony of the intestinal tract, beginning decubitis and furunculosis. At the beginning the patients only received liquid food, although the author seems to be convinced that this was not sufficient, and that the patients permanently lapsed into a condition of subnormal nutrition. He therefore administered a mixed diet, the patient receiving daily from one-half to one liter of milk, one to two soft boiled eggs, zwieback, later wheat bread, chicken broth, chicken meat or cutlets. In some cases the appetite remained unaffected, while in many patients it increased gradually. But when the appetite was very poor or when the patients became attacked by diarrhea and pain in the cecal region, they were again placed upon milk diet, upon which they subsisted until the above-mentioned symptoms disappeared, then again returning to a mixed diet. In this manner 32 patients were treated, 14 receiving mixed diet within a few days after the beginning of the disease, and 18 patients only from the beginning of the third week. All the patients thus receiving the diet were cured and did not seem to be affected by the disease as in cases fed with liquid diet. M. A. Ladyschensky, as quoted by the author, adopted even still more energetic means in his cases of enteric fever, which received from the beginning of the disease a mixed diet in larger quantities. The conclusions are as follows: (1) The mixed and forced nourishment in cases of enteric fever has no influence upon the temperature; (2) the duration of the disease is neither lengthened nor shortened; (3) it causes no complications itself, either upon the intestinal tract or other organs, neither did any cases of decubitus occur. Such a diet generally causes constipation, but with good effects upon the feces and the oral cavity; (5) the subjective condition of the patients who have been subjected to a mixed and forced nourishment is improved: the patients do not present the appearance of a grave disease, and could, if it were necessary, leave the bed, and in addition show more interest in their surroundings: (6) the stage of convalescence is shortened, and after recovery the patients do not present the emaciated and weakened appearance, otherwise so characteristic of enteric fever.

Successful Treatment of Plague by Yersin's Serum.—Dr. Novy (*American Journal of Medical Sciences*, October, 1901) reports a case of laboratory infection with bubonic plague, which developed in a young man working in the laboratory of the University of Michigan. Dr. Novy details the extreme violence and rapidity of the onset of the symptoms, and relates the immediately good effects of Yersin's antipest serum. Within twenty-four hours the patient received 120 c.c. of serum, 1 dram injected intravenously. This case was one of the pneumonic type. The patient recovered completely, although for more than two months he suffered from extreme cardiac weakness. Dr. Novy states that the plague bacillus can be detected during life if an infected gland is pierced

with a hypodermic needle, and some of its contents used to make cover-glass preparations in cultures. Novy failed in one attempt by this method because his needle did not actually pierce the small glands in which the plague bacilli were active.

The Use of Glycerinated Lymph.—In an article on **smallpox and vaccination** with special reference to **glycerinated lymph**, George Dock (*Jour. Amer. Med. Ass'n*, Dec. 21, 1901) presents the following conclusions: (1) Glycerinated lymph properly raised and prepared offers less danger of septic infection than any other kind of vaccine virus, and, notwithstanding the disadvantage of slow drying, it is to be preferred to dry points as made at present. (2) The peculiar features of the vaccine vesicle as known since the days of Jenner are due to the specific virus; any marked variation from them must be looked upon as evidence of imperfect protection. (3) Virus that produces an imperfect lesion should not be used, because, though it may induce immunity for a short time, may even prevent the taking of an active lymph inserted soon after it, it is likely to obscure the real condition of the subject and set up an unfounded feeling of security. (1) A knowledge of the natural history of normal vaccinia is very desirable for the physician. (5) The vaccination histories of all cases of smallpox, varioloid and chickenpox should be ascertained and recorded as fully as possible. (6) Makers of vaccine virus should give clear and explicit statements as to the quality of their products. The mere assertion of freedom from pyogenic germs covers only part of the case. Evidences of specific activity, as from use in the human being, should be given. For the makers, the results of variolous inoculations in vaccinated monkeys, as suggested by Copeman, would seem very useful and almost essential to the maintenance of a proper standard. (7) A government station for the making and testing of vaccine virus is highly desirable. This need not interfere with private enterprises, but, properly conducted, would be of great value to the latter. (8) Public vaccinators should be trained for their work, and facilities should be given for others to study the methods and clinical features of vaccination.

The Action of Toxic Sera on Peripheral Nerves.—The *Jour. Amer. Med. Ass'n*, Dec. 21, 1901, says editorially: "Peripheral neuritis is often associated with autotoxic conditions, as is the case in certain infectious diseases like tuberculosis and diphtheria. As the anatomic changes in the affected nerves are similar in many of these cases, it lies near at hand to look for a similar pathogenesis. Reasoning along these lines suggested to Dopter (*Arch. de Med. Exp. et d'Anat. Path.*, 1901, XIII, 789-790 to arrange for a series of experiments in which he brought the blood sera from human patients with various diseases directly into contact with the nerve trunks of guinea-pigs. In each case a control experiment was made in the same way with normal serum; in no case did any changes develop in the nerves in the control animals. In the mojority of the other experiments there developed the symptoms and the lesions characteristic of peripheral neuritis. The sera of uremic, diabetic, cancerous, and other patients, all caused degenerations similar to those produced by Dopter and Lafforgue with bacterial toxins applied directly to the nerves in another analogous series of experiments. The intensity of the degenerations, more or less purely Wallerian in type, varies with the serum employed, and in the case of the same serum its action did not have the same intensity in all animals. From the results of his experiments Dopter is inclined to regard the peripheral neuritis of toxic states due to the direct action of the toxic products in the circulating blood upon the elementary fibres of the nerve trunks."

Isolation in Travel of Children Suffering From Infectious Diseases.—M. Netter recently reported to the Pediatric Society of Paris (*Annales de Medicine et Chirurgie Infantiles*, Dec. 1, 1901), as Chairman of the Commission specially appointed for this purpose, concerning the advisability of isolating children suffering from whooping-cough and the infectious diseases while they were travelling. He concluded his report with the following recommendations: That children suffering from contagious diseases should not be permitted to occupy compartments with other travellers; (2) children suffering from contagious diseases, and those who accompany them, should have special compartments placed at their disposal. These compartments should be requested in advance and the request should be accompanied by a medical certificate. The compartments set aside for this purpose should be especially marked, and complete disinfection should be practiced after each case of infectious disease left them. He believes that it would be an advantage to have a specially constructed car containing a complete disinfecting plant. Since the isolation of patients suffering from infectious disease is of decidedly less utility to themselves and fellow travellers, it appears that they should not be made to pay any special rate for the reserved compartments. The Society recommended unanimously the report of this Committee, and urged such action.

SEROTHERAPY.

Bacteriolytic Substances in Normal Goat-Serum.—R. Pfeiffer and E. Friedberger (*Deutsche medicinische Wochenschrift*, Nov. 28, 1901) report a series of experiments which show the specificity of the bacteriolytic substances present in normal goat-serum. Their work is confined to the study along this line of the cholera and cholera-like vibrios, and of the bacillus typhosus. As is well known, these organisms, when respectively placed in a given amount in normal goat-serum are broken down and perish. Such mixtures are, however, not capable of causing infection when inoculated intraperitoneally into guinea-pigs. If, however, to a given amount of serum a sufficient amount of cholera organism is added, so that all the bacteriolytic substances present in the serum are used up, the further addition of cholera vibrios is without effect upon these, and the mixture upon intraperitoneal inoculation promptly produces infection. If, however, instead of further addition of cholera organisms, as mentioned above, typhoid bacilli are added, these are immediately destroyed. **This demonstrates that normal goat-serum possesses specific bacteriolytic substances, each of which is effective only against one of these organisms.**

DISEASES OF WOMEN.

Report of Successes in the Treatment of Floating Kidney by a New Method.—J. Ross Watt (*Edinburgh Medical Journal*, December, 1901) supports the entire abdomen in applying treatment for this condition. This he does by using two wing-shaped pieces of sheetlead, such as is used by plumbers, five pounds to the square foot, so as nearly to meet in the middle line under good, long-fitting corsets (the straight front is the best), so as to cover all the muscular area bounded by the various bony curves and elevations. Directions are given for making and adjusting the support. The author reports eighteen cases successfully treated. The patients were able to be up and about, to get out of doors, and to exercise while wearing the support; their symptoms, consisting of gastric disturbances, dragging pains, headache, etc., disappeared, and they had increased weight, firmness of muscle, especially of the abdomen, and in a few months or a year were able to give up the support entirely. This method is in line with others having as their object abdominal support as furnishing the most uniform and satisfactory results.

SURGERY.

Compression of the Brain.—Prof. D. B. Roncali, in a comprehensive lecture on this subject which appeared in the *International Clinics*, Volume I, Eleventh Series, 1901, concludes with regard to surgical intervention in traumatic lesions of the cranium as follows: First, that immediate trephining should be done whenever a depression of the skull exists, whether this is accompanied by a solution of continuity of the soft tissues or not. Second, that the usual faculty of compression possessed by the nervous tissues and their tolerance of pressure under certain circumstances should not induce the surgeon to delay trephining. Even though the compression may not produce the symptoms at once, it is sure to have a hurtful effect upon the brain sooner or later. Third, that in cases of depressed fracture of the skull there is never any need to wait for localizing symptoms to manifest themselves. Secondary

trephining often either cures only for the time being or entirely fails to cure. This failure depends, first, on the fact that the nervous elements have contracted such a habit of morbid explosive activity that the convulsions continue to recur in spite of the removal of the cause which first produced them; and, second, the degenerative processes set up in the cortex as the result of compression become inveterate, and a complete return to the original physiological condition cannot be hoped for. Fourth, that coma, in place of being a contraindication to immediate trephining, is really an indication. Fifth, the dangers of immediate trephining are less to be feared than those of the same operation done later, because in the first case infection, if it takes place, will only be extradural, as a rule, while in the second case there is risk of intrameningeal or intracephalic infection. Sixth, the therapeutic results of immediate trephining are excellent. The results of the secondary operation are often incomplete, nearly always unsatisfactory, and sometimes, instead of producing amelioration, are followed by aggravation of the symptoms. Seventh, in cases of depressed fractures of the cranium in the new-born which occur as a consequence of obstetric manipulation, craniotomy should be done, even though there may be no localizing symptoms. In a word, the rule as to immediate elevation of any depression of the bony vault of the cranium holds good for all ages.

Aortic Aneurysm Treated by Means of Silver Wire and Electricity.—Leonard Freeman and J. N. Hall report two cases. (*Amer. Jour. Med. Sci.*, Dec., 1901). Their conclusions are: (1) Considering the inefficiency of medical treatment, and the comparative efficiency of the use of silver wire and electricity, it is probably better to proceed to the latter at once without wasting valuable time upon the former. This seems all the more desirable when we consider that wiring is not a very dangerous process, and that it is in the early stages of an aneurysm, when the sac is still firm and the patient is in good condition, that the best prospects of cure exist. (2) Soft, undrawn, unalloyed silver wire, devoid of spring, that is to say, wire as it comes from the shop, is preferable to the hard, highly drawn wire alloyed with copper and full of spring. It is hardly necessary to coil the wire previously. (3) It is still an open question as to which is preferable, a large amount of wire or a small amount: but the theoretical advantages are in favor of the former. (4) A strong electric current is preferable to a weak one. (5) The cannula through which the wire is introduced should be inserted just within the sac and no farther. (6) There is little if any danger of bursting the aneurysm from increase of pressure due to coagulation in a portion of the sac only.

Penetrating Wounds of the Heart, with Suturing of the Wounds.—H. L. Nietert (*Phila. Med. Jour.*, Dec. 14, 1901) reports a case of suture of a penetrating wound of the heart. He has collected twenty-two other cases from the literature, in which this operation was performed. Out of twenty-three patients, sixteen died and seven recovered. In twenty-one cases the wound was located on the left side of the sternum, in two cases on the right side. The pleura was injured in twenty two cases, and uninjured in one case. The left auricle was penetrated in one case, the right ventricle in six cases, the left ventricle in fifteen cases. The writer believes that, in the future, operations of the heart for penetrating wounds will be more frequently performed. Statistics show that more than 90 per cent. of all heart wounds not operated upon prove fatal. The mortality in this series is 70%

A New and Simple Method of Sterilizing Catgut by Boiling; and a New Method of Sterilizing Sponges by Boiling.—Charles A. Elsberg, in a paper on this subject in the *International Clinics*, Eleventh Series, 1901, states that his procedure of sterilizing catgut in brief is as follows: (1) Catgut freed from fat is tightly wound on appropriate glass spools, the ends being firmly tied so that the gut cannot loosen or unravel; (2) The spools are boiled from ten to thirty minutes in a saturated solution of ammonium sulphate in water or, for chromicized catgut, in a 1 to 1000 watery chromic acid solution: (3) the spools are agitated for at least one-half minute in cold or, better, warm sterile water, carbolic acid, or sublimate solution; (4) they are preserved in strong alcohol. He also presents a new method of sterilizing sponges by boiling, which may be briefly stated: (1) The sponges are freed from calcareous matter by immersion for twenty-four hours in eight per cent. muriatic acid solution and thorough washing in water; (2) they are boiled for fifteen minutes or longer in a solution which contains two parts of tannic acid and one part of caustic potash to every one hundred parts of water; (3) the sponges are then squeezed and washed in sterile water, carbolic acid, or sublimate solution until all of the solution of potassium hydrate and tannic acid—which is of a dark brown color—is removed; (4) they are preserved in a three to five per cent., carbolic acid solution.

DISEASES OF THE GASTRO-INTESTINAL TRACT.

Sulphur in the Treatment of Dysentery.—G. E. Richmond (*The Lancet*, Nov. 23, 1901) states that sulphur both from its solidity and non-absorbility, is an ideal intestinal antiseptic. It passes along the whole intestinal tract as sulphur, and is found suspended in a yellow powder in watery bowel movements. When administered in cases of dysentery the stools become less offensive, and flatulency does not become an annoying symptom. Richmond believes that the sulphur is not only of value in **dysentery**, but that it may be of decided service in cases of **summer diarrhea**, and possibly in cases of **typhoid fever**. It is his custom to administer sulphur combined with powdered opium in acute cases of dysentery, and in chronic cases to administer the sulphur alone. The opium increases the patient's comfort and by its inhibitory effect upon peristalsis, controls the diarrhea and limits the motion of the ulcerated bowel. In this way the sulphur may exert its antiseptic qualities. The manner of the action of sulphur in the intestines is more or less a matter of doubt. It may be stated that **sulphuretted hydrogen** and other **sulphur acids** are formed and prohibit the growth of the specific microorganisms.

DISEASES OF KIDNEYS.

The Treatment of Albuminuria.—Edel (*Deutsche med. Woch.*, Oct. 31, 1901) lays especial stress upon the point that the flow of urine is laregly increased by improving the tone of the circulation. He states that this may be observed by the increase after changing from the vertical position during the day to the horizontal at night, by the diminuition of the albuminuria in the afternoon urine and the administration of diuretics. He believes that increased diuresis abolishes albuminuria. He suggests stimulating the circulation by such physical exercise as mountain-climbing by systematic respiratory gymnastics, and he says that this treatment has been found, in his present experience, a valuable aid to drug treatment of albuminuria.

Mineral Baths in Nephritis.—In an article on the treatment of chronic nephritis by mineral drinking waters and mineral baths, Dr. J. M. Groedel (*Practitioner*, December, 1901) states that the Nauheim baths are contraindicated in cases of chronic parenchymatous nephritis, and such cases of secondary resulting from the first, in which from time to time there are augmented secretions of albumin or blood in the urine, and also in cases in which very advanced arteriosclerosis is combined with contracted kidney; in cases of contracted kidney in which the circulation is so far impaired that with marked dilatation and insufficiency of the heart, decided symptoms of venous congestion in different organs, extreme dyspnea, loss of appetite, etc., are present. Nor should a patient be ordered the bath treatment if he has already had an attack of acute edema of the lungs, or an attack, however slight, of apoplexy.

PHARMACOLOGY.

The Toxic Effects of Trional.—At a meeting of the Chicago Medical Society, October 23, 1901, Dr. Archibald Church and E. D. Hutchinson contributed a joint paper on **trional fatalities**, in which they reported a fatal case of trional poisoning. Some interesting points were bought out. Dr. Church stated that nearly twenty cases of death from this drug, administered in so-called medicinal doses, are reported in periodical literature; yet one of the most recent text-books says that trional may be given in doses

up to 60 grains in twenty-four hours. In none of the fatal cases has more than 30 grains within twenty-four hours been administered. In one instance death followed the administration of 20 grains of trional in two doses. Dr. Harold N.Moyer believes that trional is much less toxic than sulphonal. He mentions one case of sulphonal poisoning which recovered. The majority of cases of poisoning by both of these drugs that have presented hematoporphyrin in the urine in considerable quantities, have resulted fatally. On account of the untoward effects of both these drugs, Dr. Moyer stated that he has not used them in his own practice for more than a year and a half. Dr. Sanger Brown believes that drugs of this class are of far less value than chloral, hyoscyamus, hyoscin, etc., and he had adhered to the latter.

Quinine in Urticaria of Malarial Origin.—At a meeting of the Section on General Medicine of the College of Physicians of Philadelphia, held on December 9, 1901, Dr. David Riesman read a paper on: **Skin Eruptions in Malaria with the report of a case of urticaria.** He mentioned the undoubted association of **herpes zoster**, and **urticaria** with malaria in a proportion of cases, and stated that in rare instances the urticaria-like eruptions at times took the place of the malarial paroxysm. The occurrence of urticaria periodically might prove a valuable aid to the diagnosis of an atypical malaria and suggest the propriety of a blood examination. Frequently urticaria has been seen to disappear after the administration of quinine, which had resisted all other treatment. The paper dealt with the question of the variety of eruptions which are occasionally observed in malaria and their frequency. Urticaria seems to occur in varying percentages of cases in different seasons and in different years.

Treatment of Tuberculosis by Nascent Iodin.—A Cavazzani (*Gazetta degli Ospedali*, Nov. 3, 1901) states that the injection of iodin into the blood of animals causes the generation of nascent iodin in the lungs when the animals are afterward forced to inhale the fumes of essential oil of turpentine. After thorough experimental confirmation of this fact, Cavazzani applied it to the treatment of pulmonary tuberculosis in the clinic, and now reports numerous complete cures from this nascent iodin method of treatment during ten years of experience. This simple and effective treatment has no inconveniences except that it requires months and sometimes a year or so before the cure is complete. Some of his patients have been completely cured for more than six years. He mentions that at first the symptoms become aggravated under this treatment. He applies it in both acute and chronic cases and has thus cured patients whose histories of tuberculosis dated back several years.

Formaldehyde as a Disinfectant.—Sir Charles A. Cameron, in his special report on Public Health (in the *Dublin Journal of Medical Science*, December, 1901), says: "Dr. David Brough, of Boston, has published an interesting brochure on the above subject. This gas is a derivative of methyl-alcohol (wood spirit), and has the formula CH_2O. Dissolved in water it is known in commerce as formalin. It is used in the preservation of cream and other articles. He employs it in the disinfection of rooms, sometimes alone and sometimes in conjunction with mercurial chloride spray. The odor of sulphurous acid is not easily gotten rid of in a disinfected room, but that of formalin is destroyed by the evaporating of a little solution of ammonia into the atmosphere. Dr. Brough speaks speaks highly of this disinfectant. He says that the gas acts best between the temperatures of 50° and 110° F. Below 35° its action is unsatisfactory. He believes that to be really efficacious a full amount of gas must be employed. He considers that not less than a pound of formalin per 1000 cubic feet should be used, and even so much as two pounds might be employed. In this respect he agrees with Dr. Wyatt Johnson, of Montreal, who has experimented with formaldehyde. A great advantage attending the use of formalin is that it is without injurious action on clothing, bedding, etc. Formalin is really only a surface disinfectant. It has not the penetrative power of superheated or ordinary steam. It is, therefore, more adapted for disinfection of clothing and bedding. In Dublin it is used only for the former. In disinfection of clothing and bedding a great point is the expulsion of the air from the pores. Professor Delépine found that saturated steam, free from air, killed anthrax spores in 35 seconds."

Toxic Hemoglobinuria After the Administration of Antipyrin.—Simon-Maheu reported a case of this condition before the Pediatric Society of Paris (*Annales de Medicine et Chirurgie Infantiles*, Dec. 1, 1901). The patient was a little girl who suffered from a severe case of chorea. She had taken nine grams of antipyrin in four hours. At the end of this time the urine was albuminous and of a red color. Microscopic examination did not reveal the presence of the red cells, but the spectroscope showed the hemoglobin rays. Blood examination showed that hemoglobin was present in the urine cells, and this hemoglobin persisted after the presence of hemoglobinuria. In the discussion which followed, Variot stated that this case recalled to his mind one which he had observed following the administration of two or three grams of **chlorate of potash** in an infant of six years.

The Pillow-Slip Method of Using Mercury.—An editorial on this subject in the November number of *Medicine*, discusses the method of therapeutic employment of mercury as follows: The profession have long recognized the advantage of introducing mercury under the skin in preference to administering it by the mouth. Mercury, like most metallic poisons, with difficulty passes by the liver into the general circulation. The liver seems to have a peculiar capacity for turning back metallic substances into the intestines, from which they are absorbed to again reach the liver, to be again excreted by the bile. We do not know how often this process of absorption and excretion is carried on, but it is certain that the amount which is absorbed and enters the general circulation is only a small proportion of that which is ingested, and this quantity is only taken up after a considerable time. The somewhat analogous substance, arsenic, is shown to obey the same rule. If arsenic is injected hypodermically it does not produce the local disturbance of the stomach, and its toxic action upon the upper portion of the small intestine is *nil*. When administered in large doses in the form of a soluble preparation under the skin, it is found to have the toxic effects of a narcortic poison, and to be quite devoid of local irritation. That the explanation of this is found in the persistence with which arsenic is excreted by the bile after being absorbed is in the highest degree probable. In the use of mercury it is that portion which passes beyond the portal circulation and enters the blood which is of service in dissolving exudates and in overcoming the specific effect of the syphilitic poison. Two methods are available aside from the use of mercury by the stomach; one is to give it hypodermically, the other to rub it into the skin. The hypodermic method, by which soluble, and sometimes insoluble, salts of mercury are placed deeply into the muscular tissues, has been warmly recommended by certain syphilographers, but others contend that it is not as efficient as the oral administration of the drug. The ideal salt of mercury has not yet been devised for hypodermic or intramuscular injection, so that whenever this method is employed there is more or less irritation, and absorption is very slow. It has the advantage of definiteness, because when a given quantity of mercury is once introduced, it must ultimately be absorbed. The inunction method is far from definite, but efficiently performed it is a valuable means of introducing mercury into the general circulation. Experiments have shown that there is comparatively little absorption through the unbroken surface of the skin, even when the inunctions are properly performed. The claim has been made by some that there is practically no absorption, but this has been experimentally shown to be incorrect; but the amount of absorption is very much less than has generally been supposed. Many believe that inunctions are useful from the fact that the mercury is volatilized at the temperature of the body, and is thus slowly absorbed by the lungs. One thing is certain, that when this avenue of absorption is effectively closed, the amount of mercury which is absorbed by the unbroken skin, even when thoroughly rubbed in, is very minute. In the so-called pillow-slip method dependence is placed upon volatilization and inhalation. A small muslin bag is prepared, of sufficient

size to cover the front of the chest. The bag is fitted with suitable tapes so that it may be attached around the neck and held smoothly under the arms. The inside of the bag is spread with from one-half to two drachms of mercurial ointment; the bag is then inverted and fastened neatly to the surface of the chest. The heat of the body vaporizes the drug, which is gradually inhaled. Welander, who first urged this method, has secured results comparable to those obtained by inunction and superior to those obtained by hypodermic injections. He has frequently observed a mercurial stomatitis develop within a few days after the application of such a bag containing mercurial ointment. In employing this method in one of his cases that was under treatment in hospital, a patient occupying an adjoining bed was accidentally mercurialized, showing that the volatilization of the mercury at the body temperature is not as slight as might be expected. We are surprised that the method of Welander has not been more generally adopted, as it has been shown that it is both cleanly and efficient. It is much simpler than inunctions, there is not the same danger of local reaction in the skin, and the amount of mercury which is absorbed in this way is equal if not superior to that which is absorbed in inunctions.

The Use of Eserin in Intestinal Atony.—The use of eserin in medicine is generally restricted to its place as well recognized mydriatic. For many years among veterinarians it has been recognized that when given in a small dose, eserin stimulates muscular fibers of the intestines, and greatly increases peristalsis. Prof. C. von Noorden, physician to the Municipal Hospital of Frankfort on the Main, has recently employed eserin in the treatment of intestinal atomy. (See *La Semaine Medicale*, Oct. 23, 1901). In five cases of abdominal tympany, post-operative or following upon typhoid fever, salpingitis, etc., Dr. von Noorden has brought about the rapid disappearance of the symptoms of meteorism by dissolving the salicylate of eserin in doses varying from 0 gr. 0015 decimilligr 2 gr. 003 milligr, divided in two, three or four doses. Owing to the rapid change of the drug in solution von Noorden suggests its employment in powder. In addition, to prevent the toxic effects it ought not to be given in greater doses than 0 gr. 001 milligr. at a time, and a single dose ought not to exceed 0 gr. 003 milligr. a day. If, in spite of the precautions used, toxic symptoms arise, it has been found that subcutaneous injections of atropine constitute a most efficacious antidote.

Official Test of Drugs in Belgium.—The Belgium authorities publish in the *Bulletin de l'Hygiene Publique* (says the *Jour. Amer. Med. Ass'n*, Nov. 30, 1901) the report of the inspectors of drug-stores and pharmacies, without mentioning names. *La Semaine Medicale* quotes certain paragraphs from the latest report which explain the variable results obtained from prescriptions in many cases. It states, for instance, that reduced iron is almost always poor, containing sulphids and only 40 to 60 per cent. of iron instead of the proper 89 per cent. Tincture of iodin seldom contains more than 30 to 40 per 1000 of free iodin instead of the normal 70 per 1000. Similar inspection and reports might be of advantage in other countries, it adds. The medical corps and the pharmacists should be enlightened as to the actual composition of the substances they are using.

The Effect of Methyl Alcohol.—H. Moulton (*Jour. Amer. Med. Ass'n*, Nov. 30, 1901) states that it worthy of note that we know of no substance which when swallowed selects for attack with such uniformity the optic nerve and retina. Those who record cases of blindness due to this cause mention in all thirty persons who drank from one to two drams to an ounce or more of methyl alcohol, and were made sick by it. Fifteen, or 50 per cent. lost their sight. One of the first cases on record was published by the present writer in 1899. Four preceded and others followed, till now fifteen or more are described in literature. A dozen or more cases from essences also are reported, a sufficient number to afford reliable data for comparison. An analysis of fifteen cases of wood alcohol blindness, and of twelve cases of blindness due to essence of Jamaica ginger, etc., shows the striking identity of important symptoms. In each group, unless the dose was large enough to produce coma, no unusual symptoms presented on the first day. Usually on the second or third day, sometimes later, the almost constant history is of nausea, vomiting, headache and dizziness. Visual disturbances are delayed for a day or two longer. In about twelve to forty-eight hours blindness becomes total. In a few days some even useful vision is restored, only to be lost again in a short time. In every case where the field of vision was studied, a central scotoma was demonstrated, except once, namely, in Stieren's case of ginger poisoning. Narrowing of the field was equally characteristic. Atrophy of the papilla was universal, most pronounced in the temporal half and preceded in a few cases by a low grade of visible neuritis. In about half of each group the retinal vessels were narrowed, in the other half normal. Other symptoms are "excitement," "coma," semi-coma," "depression," "coming and going of sight," "sensitiveness to pressure and to movement of eyeballs," etc. Only two cases recovered normal vision, one in each group.

Therapeutic Action of Strychnin.—Fernet (*La Presse Medicale*, December 4, 1901) recommends the therapeutic administration of strychnin in alconolism, tuberculosis, and the adynamic infectious diseases. In the treatment of delirium tremens, opium, chloral, and sulphonal are not comparable to this remedy; the rational treatment consists in isolation, feeding, and the administration of strychnin. In tuberculosis, in the adynamic forms of pneumonia, of influenza, and of typhoid fever, strychnin also gives good results. It may be administered either by the mouth or by subcutaneous injection.

The Action of Mercury.—W. H. Porter concludes an article upon this subject (*Merck's Archives*, November, 1901), by stating that the principal actions of the mercurials are: (1) Stimulant to the hepatic cells; (2) cholagogue in action by virtue of exciting hyper-secretion of the bile acids; (3) sedative, due to the two previous actions; (4) Its alterative, antiphlogistic, anti-syphilitic, diuretic effects, etc., are secondary to the above actions; (5) ptyalism from mercury is due to the inactivity of the hepatic cells, and to the salivary glands attempting to do what should have been done by the hepatic cells.

Difference Between Methylene Blue and Methyl Blue.—Every physician, says *Merck's Archives*, (Nov. 7, 1901), who has had occasion to prescribe methylene blue, medicinal, knows how frequently other substances are substituted for this drug. The substitution is generally unintentional, and results from the confusion existing in the druggist's and prescriber's mind as to the true identity of the drug. The most common substitutions are methyl blue and the dye methylene blue. Achilles Rose (*Post-Graduate*, XVI, No. 9) has also had many unfortunate experiences in this respect, frequently being supplied with methyl blue, when the prescription called for methylene blue. He therefore cautions physicians to be very careful in specifying the drug, and to go to the drug-store and examine the label for themselves, so as to be sure that the right article is dispensed. He also gives the following chemical test, which is easily performed and by which methylene blue can at once be differentiated from methyl blue: A diluted solution of methyl blue becomes decolorized on the addition of ammonia water; a solution of methylene blue (even if very highly diluted)is not decolorized by water of ammonia. Care must also be taken, in prescribing, not to abbreviate, but to write out in full: Methylene blue, medicinal. (Chemically, methylene blue, medicinal, is tetra-methylthionine hydrochlorate; methyl blue is triphenyl pararosaniline-trisulphonate of sodium, and is used as a dye. Then again there are two distinct kinds of methylene blue on the market: Methylene blue medicinal; and regular methylene blue dye, which is not eligible for use in or on the body on account of its toxicity.)

Hydrogen Acid Gas as a Disinfectant.—J. S. Fulton and William R. Stokes (*Maryland Med. Jour.*, Dec., 1901) discussing their experiments with hydrocyanic-acid gas, state that with 24 hours' exposure and an amount of gas equivalent to one gram of cyanide per cubic foot of space, hydrocyanic-acid gas gave as good a surface disinfection as

is in practice obtained with formaldehyde. The organisms used were B. diphtheriae, B. coli, B. typhosus, B. subtilis, staphylococcus, pyogenes aureus, and staphylococcus albus. Since the cost of room disinfection with hydrocyanic is about four times that of formaldehyde, and, since the gas is more dangerous than formaldehyde, and since the only advantage in the use of hydrocyanic acid is lessened risk by fire, they regard these observations on the bactericidal power of hydrocyanic acid as interesting rather than valuable. Its well known destructiveness to animal life seemed to indicate that hydrocyanic acid might be useful in those diseases which are known to be conveyed by insects and rodents. In the treatment of the parasitic diseases of plants and in the disinfection of nursery stock hydrocyanic acid has been successfully employed since 1887. During this time the dangerous chemicals have been freely handled by inexpert persons, and careful observations upon various important points concerning the manufacture and use of the gas have been made. These authors have experimented with hydrocyanic-acid gas in an amount of 33 grams of cyanide to 100 cubic feet of space upon house flies, wood-eating termites, roaches, bedbugs, mosquitoes, the ox louse, the black ant, and rats, mice and guinea pigs, and these experiments were eminently successful. In two experiments they exposed bread, butter and milk for twenty-four hours to the action of hydrocyanic vapor in amounts three times greater than that recommended for the destruction of animals. These materials were then fed to rats, but no poisonous effects were observed. The authors discuss the feasability of employing this gas in public health disinfection. They mention the popular opinion as to the deadly nature of hydrocyanic acid gas as a poison, but state that there are but few cases in the literature of poisoning by the cyanogen compounds, and that enormous amounts of cyanide of potassium are used by workers of all grades of intelligence in numerous arts and industries, and that the odor of prussic acid is quite often observed in the shops and on the streets, and one may, therefore, be convinced that the deadly cyanide is about as amenable to human purposes as many other substances of ill repute.

Toxic Effects of Sodium Salicylate.—An interesting case is reported in the *Ophthalmic Record*, October. 1901, by Simmons Snell. The patient was a young woman who was suffering from acute articular rheumatism, and had been taking salicylate of sodium. In the morning she awoke and said that everything was dark before her. At eleven o'clock, when seen by her attending physician, light perception was lost. Mr. Snell saw her on the following day, and found her perfectly blind. The ophthalmoscope showed nothing pathologic. She was again examined on the next day with negative result, and died that evening of endocarditis and pericarditis. There had been no return of vision. The total quantity of salicylate of sodium taken was between 140 and 160 grains.

MISCELLANY.

The Treatment of Fever.—Ernest Jendrassik (*Revue de Medecine*, November 10, 1901) says that cold bathing in fevers, by abstracting a certain number of calories which immediately have to be replaced, causes overwork of the system, exaggerated combustion, which means a considerable loss of substance, and rapid return of the fever; in many ways it resembles the old-fashioned bleeding. If not too cold, it may be sedative, refreshing, tonic, hygienic, but not antipyretic. The author holds that both antipyrin and phenacetin are of value. **Phenacetin** is best in high fevers, especially in children, but, because of its sometimes suddenly losing its effect, may have to be replaced by **antipyrin**. One to one and a half drams of **phenacetin** should be given in one dose. The action will last about six hours, and when the temperature begins to rise again, the dose should be repeated, and thus four doses may have to be given in twenty-four hours. This author believes that insufficient dosage is responsible for the lack of results of the employment of these remedies.

Cocaine Intoxication.—E. Berth (*Wiener klinische Rundschau*, 1901, No. 15) believes that such intoxications rarely occur, and mostly do when the cocaine is applied within the ear. He relates a case in which a few drops of 2% solution caused clonic convulsions. In operating upon adenoid vegetations but few surgeons, including the author, use the cocaine. The author advises that all such operations upon adenoids, and tonsillotomies, in which the operation lasts but a second, cocaine should not be employed, and when it is to be employed, should be injected or applied in graduated strengths.

The Effects of Diluents on Milk.—Franklin W. White (*Jour. Boston Soc. Med. Sci.*) has experimented on the effects of various diluents on the coagulation and digestion of milk, and reaches the following conclusions: (1) Dilution of milk with cereal decoctions of proper strength renders the casein curd much more fine, soft and digestible than simple dilution with water. There is no difference in the action of various cereals, such as barley, oats, rice, or wheat: (2) the above property is due mainly, if not wholly, to the starch in solution, the most desirable amount of starch in the milk mixture for practical use is approximately ¾ per cent: (3) Diastase, by converting the starch to dextrin and maltose, promptly lessens and removes the action of cereal waters upon casein. In addition, therefore, is not a practical measure when the action upon the curd is desired; (4) albumin water has no practical value as a diluent of milk; (5) lime-water added to milk has no more effect than water upon the character of the curd produced in the animal stomach.

The Effect of Direct, Alternating Tesla Currents and X-Rays on Bacteria.—F. R. Zeit contributes an interesting article to the *Jour. Amer. Med. Ass'n*, (Nov. 30, 1901), upon this subject. His conclusions embody the result of most careful and thorough investigation, and we quote them in full: (1) A continuous current of 260 to 320 milliamperes passed through the bouillon cultures kills bacteria of low thermal death points in 10 minutes by the production of heat—98.5° C. The antiseptics produced by electrolysis during this time are not sufficient to prevent growth of even non-spore bearing bacteria. The effect is a purely physical one; (2) a continuous current of 48 milliamperes passed through bouillon cultures for from 2 to 3 hours does not kill even non-resistant forms of bacteria. The temperature produced by such a current does not rise about 37° C. and the electrolytic products are antiseptic but not germicidal; (3) a continuous current of 100 milliamperes passed through bouillon cultures for 75 minutes kills all non-resistant forms of bacteria even if the temperature is artificially kept below 37°C. The effect is due to the formation of germicidal electrolytic products in the culture. Anthrax spores are killed in 2 hours. Subtilis spores were still alive after the current was passed for 3 hours; (4) a continuous current passed through bouillon cultures of bacteria produces a strongly acid reaction at the positive pole, due to the liberation of chlorin which combines with oxygen to form hypochlorous acid. The strongly alkaline reaction of the bouillon culture at the negative pole is due to the formation of sodium hydroxid and the liberation of hydrogen in gas bubbles. With a current of 100 milliamperes for 2 hours it required 8.82 milliamgrams of sulphuric acid to neutralize 1 c.c. of the culture fluid at the negative pole, and all the most resistent forms of bacteria were destroyed at the positive pole, including anthrax and subtilis spores. At the negative pole anthrax spores were killed also, but subtilis spores remained alive for 4 hours; (5) the continuous current alone, by means of DuBois-Raymond's method of non-polarizing electrodes and exclusion of chemical effects by ions in Kruger's sense, is neither bactericidal nor antiseptic. The apparent antiseptic effect on suspension of bacteria is due to electric osmose. The continuous electric current has no bactericidal nor antiseptic properties, but can destroy bacteria only by its physical effects—heat—or chemical effects, the bac-production of bactericidal substances by electrolysis; (6) A magnetic field, either within a helix of wire ar between the poles of a powerful electro-magnet, has no antiseptic or bactericidal effects whatever: (7) alternating currents of a three-inch Ruhmkorff coil passed through bouillon cultures for 10 hours favor growth and pigment production; (8) High frequency, high potential currents—Tesla currents—have neither antiseptic nor bactericidal properties when passed around a bacterial suspension within a solenoid. When exposed to

the brush discharges, ozone is produced and kills the bacteria; (9) Bouillon and hydrocele-fluid cultures in test tubes of non-resistant forms of bacteria could not be killed by Röntgen rays after 48 hours' exposure at a distance of 20 mm from the tube: (10) suspensions of bacteria in agar plates and exposed for 4 hours to the rays, according to Rieder's plan, were not killed; (11) tubercular sputum exposed to the Röntgen rays for 6 hours at a distance of 20 mm. from the tube, caused acute miliary tuberculosis of all the guinea-pigs inoculated with it; (12) Röntgen rays have no direct bactericidal properties. The clinical results must be explained by other factors, possibly the production of ozone, hypochlorous acid, extensive necrosis of the deeper layers of the skin and phagocytosis.

Indications and Contraindications to Bicycle Riding.—Prof. P. Schiefferdecker (*Schmidt's Jahrbücher*, Vol. 270, No. 5, 1901, page 113) who has recently written an exhaustive book upon the **hygiene of bicycle riding**, has again published an extensive treatise in the above named journal, in which he also collected the literature of recent years. He emphasizes the fact that exercise in the open air is common to all outdoor sports, but that in bicycle riding there is a systematic and continuous exercise of a number of muscles, with a relatively small exertion of each. As many muscles work simultaneously. There results a considerable consumption of energy, and in consequence a marked metabolism. As each one of the muscles within a certain period of time is exerted but little, very little fatigue results after a protracted ride. For this reason relatively weak muscles may also be exercised by bicycle riding, and even those that are diseased or whose nerves are involved. Bicycle riding for **therapeutic** purposes has many advantages over walking exercises, such as economy of time, a more rapid subjection of the patient to fresh air, less exertion of individual muscle groups, and a more thorough exercise of the whole body within a definite period of time. Riding, on the other hand, makes it extremely difficult to estimate the exact amount of energy that is to be expended as well as the definite dosage of exercise to be imposed: furthermore the body is subjected to more concussion, thus increasing the exertion of individual muscle groups. In riding, the will of the horse in many instances makes exacting demands upon the muscular energies of the rider. The movements that are requisite in bicycle riding are somewhat similar to those employed in climbing mountains or stairs. But while in both varieties of exercises the same muscles are employed, there are still the important differences in the demands that are exacted of the individual groups. In climbing stairs and mountains the whole weight of the body must be lifted by the quadriceps and muscles of the calf, while in bicycle riding such muscles are only called violently into play when there is a strong head wind or precipitous roads. The author qualifies this statement by saying that among the muscles of the calf spoken about he refers to all the flexors on the posterior aspect of the leg and foot, including also the peroneus longus and brevis which generally are not reckoned in this group. Furthermore, in walking, the whole weight must be balanced at every step upon the heads of the femurs, while in bicycle riding the most deep seated portions of the pelvis rest upon the saddle. In climbing, the work of balancing is distributed among the muscles which connect the thigh with the pelvis. The gluteal muscles and the flexors at the posterior portion of the thigh, as well as, of course, the rectus femoris, psoas and the tensor fasciae are employed. In bicycle riding on the other hand as far as the propulsion of the wheel is concerned, the glutei and flexors of the posterior portion of the thigh are not actively engaged, but only passively. The author considers bicycle riding not only an important factor as far as culture is concerned, but an important therapeutic agent.

The Therapeutic Value of Lumbar Puncture.—Maximilian Hirsch (*Wien. klin. Rundschau*, XIV, 32, 33, 1900) reports a case of **basilar meningitis** occurring in a patient, 18 years of age, which promptly receded after the evacuation of 25 c.cm. of a clear **cerebrospinal fluid** containing some albumin. He advises that this harmless and minor operation be performed early, and in selected cases. The best results are to be hoped for in serous meningitis, and it is even of some value in tuberculous meningitis. Hirsch believes that this procedure deserves a place in the therapy of meningitis, and that its value is not to be doubted.

The Action of Apocynum Cannabinum Upon Heart Disease.—Golubinin (*Klinitscheski Journal*, December, 1900) has employed the fluid extract of **apocynum cannabinum** in the treatment of heart disease with excellent results. Under the influence of the remedy there soon occurred slowing and increased force of the pulse: the number of the heart contractions remained diminished, not only as long as the remedy was employed, but also when its use had been discontinued. When the cardiac lesions were marked, the pulse frequency again rose after the remedy was discontinued, which is the same as in other similar cardiac remedies. The arrhythmia of the pulse, however, diminishes considerably, and when the endocardium was inflamed the irregularity of the heart contractions became less but did not entirely disappear. The blood pressure and the amount of urine visibly increased, and the albuminuria (as far as it depended upon circulatory disturbances in the kidney) soon disappeared. With the improvement of the circulation the frequency of respiration diminished. According to the author's observations the drug should be administered up to five drops three to four times daily, under which dosage no disturbances became manifest. The occasional slight gastric irritation following the administration of the drug soon disappears if the remedy is withheld from one to two days, or can even be prevented by administering at the same time an equal quantity of the tincture of cannabis indica. Golubinin considers the remedy very useful in grave cases, where other allied drugs fail.

The Treatment of Paralysis Agitans with Hyoscin Injections.—Hilbert (*Die Heilkunde*, 1901, III) has succeeded in substantiating the opinion of Erb and Eulumberg as to the treatment of paralysis agitans with **hyoscin** injections. A woman, 66 years of age, with tremor had regularly received injections every three days of hyoscin hydrobromate in quantities varying from 0,0003 to 0,00035, with the result that marked quietude lasting several hours ensued, with the disappearance of the tremor: and when the injections were given in the evening, sleep was obtained. During all these years of treatment with hyoscin, a most poisonous drug, her strength did not become impaired, nor did any other disagreeable symptoms occur. It never became necessary to increase the dose. The author emphasizes that by a careful gradation of the dose the correct amount to be administered can be and should be ascertained in every case. Furthermore the author lays great stress upon the fact that only freshly prepared solutions should be employed.

The Value of the Phoshporus Therapy in Rachitis.—Monti (*Wien. klin. Woch.*, 1901, No. 3, S. 67) states that up to now he has not been able to observe any influence of phosphorus upon the rachitic process, and that his clinical observations go to show that the disease has progressed in spite of the administration of the phosphorus. He believes that the advocates of the phosphorus therapy have followed up their cases without due regard for the elements entering into the growth of the individual, and therefore their reports lack clinical substantiation. He furthermore believes that prescribing and preparing the cod liver oil and phosphorus is not a thorough procedure and does not prove that the intended doses of phosphorus are being administered to the child.

The Treatment of Epilepsy with Bromipin.—Lorenz (*Wiener klin. Woch.*, October 4, 1900, No. 40) employed **bromipin** in 34 epileptic cases. In 11 patients the attacks grew worse: in the rest they remained about the same. In 13 cases the number of attacks was less; in 3 the attacks were temporarily less frequent; the rest remained unchanged. The majority of the patients gained in weight, and seemed in better condition. The remedy was only rejected in exceptional cases, and then combined with the food to advantage. Enemata were never necessary and the dose varied between 10 and 20 g. of 10% bromipin, which was equivalent to 1.75—3.5 g. of sodium bromide. An effectual dose is one daily of 10 to 30 g. of 10% bromipin. The results exceeded those that came from the opium, bromide treatment.

Formulae.

RESPIRATORY TRACT.

Tuberculosis.—A subscriber recommends the following as useful in the first and second stages of pulmonary tuberculosis. He has been using it for ten years, and claims to have arrested the disease in three months in incipient cases and in three to six months where subcrepitant rales have been present:

℞

Lecithin		
Acidi succinici	āā	grs. v
Glycerini		*m* x

M. S.: One dose three times a day.

Convalescent Stage of Diphtheria.—Yeo (*Jour. Amer. Med. Ass'n*, December 7, 1901):

℞

Ferri et quininae citratis		gr. lxxx
Liquoris strychninae		f. ʒ ss
Acidi hydrochlorici diluti		*m* lxxx
Aquae chloroformi	q. s. ad	f. ʒ viii

M. S.: Two or three teaspoonfuls twice or three times a day an hour before meals.

As a disinfecting mouth wash:

℞

Potassii chloratis		ʒ ij
Glyceriti boracis		ʒ j
Acidi borici		ʒ ij
Glyceriti acidi carbolici		ʒ j
Aquae menthae piperitae	q. s. ad	f. ʒ xij

M. S.: To be mixed with equal quantity of hot water and use as a gargle.

Asthma.—G. R. Johnson (*The Medical Standard*, November, 1901):

℞

Potassii iodidi		ʒ iij
Extracti belladonnae		ʒ i
Extracti lobeliae fluidi		f. ʒ ij
Extracti grindeliae fluidi		f. ʒ ss
Glycerini		
Aquae	āā	f. ʒ iss

M. S.: Take a tablespoonful every two, three or four nuors, as necessary.

Shoemaker recommends the following between the attacks:

℞

Potassii iodidi		ʒ vj
Liquoris potassii arsenitis		f. ʒ iss
Extracti grindeliae fluidi		f. ʒ ij
Tincturae euphorbiae piluliferae		f. ʒ v
Extracti yerbae santae fluidi	q. s. ad	f. ʒ iv

M. S.: Teaspoonful three times a day.

In the suffocating stage the following is recommended:

℞

Tincturae lobeliae		f. ʒ ss
Tincturae sanguinariae		f. ʒ ij
Olei menthae piperitae		f. ʒ ss
Syrupi		f. ʒ v

M. S.: Half a teaspoonful every hour or so until nausea results.

Tracheo-bronchitis in Children.—Markan (*Medical Press and Circular*):

℞

Tincturae aconiti		*m* xij
Syrupi aurantii florum		
Syrupi codeinae	āā	f. ʒ j
Aquae		f. ʒ ij

M. S.: Teaspoonful three times daily for a child of three months, to be increased according to age.

Tuberculosis.—(*The Post-Graduate*, November, 1901). To be used in a hot air inhaler.

℞

Olei camphorae		gtt. clx
Olei terebinthinae		
Olei aucalypti	āā	f. ʒ j

M. S.: 2 to 8 drops at an inhalation.

Tuberculosis.—L. Weber (*The Post-Graduate*, November, 1901) recommends in the early stage to keep down the temperature the folowing:

℞

Acetanilid		gr. j
Phenacetin		
Antipyrin	āā	gr. iij

M. et fiat charta No. i.

S.: One as often as necessary.

Spasmodic Bronchostenosis.—A. Abrams (*Medical Record*, December 7, 1901):

℞

Potassii iodidi		3 v
Tincturae lobeliae		f. 3 x
Spiritus glonoini (1%)		*m* xvj
Elixiris potassii bromidi	q. s. ad	f. ʒ iv

M. S.: A teaspoonful three times a day after meals.

Whooping Cough.—Hess (*New York Medical Journal*, November 23, 1901, from *Therapie der Gegenwart*; *Medecine Moderne*, October 9, 1901):

℞

Pulveris cocci		gr. xv-xxx
Potassii carbonatis		gr. xxx-vi
Sacchari		f. 3 iiss
Aquae destillatae		f. ʒ iij

M. S.: Use locally.

NEURALGIA AND ALLIED CONDITIONS.

Gouty Attacks.—(*Clinical Review*, October, 1901):

℞

Extracti nucis vomicae		gr. 1/4
Hydrargyri chloridi mitis		
Pulveris ipecacuanhae		
Extracti aloes		
Extracti colchici	āā	gr. j

M. et fiat pilula No. i.

S.: One pill every 4 hours until purgation occurs.

Neuralgia.—(*Jour. Amer. Med. Ass'n*, November 16, 1901):

℞

Menthol		ʒ ss
Olei gaultheriae		ʒ j
Tincturae capsici		*m* x
Extracti belladonnae		gr. xxii
Lani		ʒ iv

M. S.: To be used over painful areas two to three times a day.

Inflamed Rheumatic Joints.—(*Maryland Medical Journal*, October, 1901):

℞

Sodii carbonatis		ʒ ss
Tincturae opii		f. ʒ j
Glycerini		f. ʒ ij
Aquae destillatae	q. s. ad	f. ʒ xij

M. S.: Saturate hot cloths with the lotion and apply to the part.

Local Treatment of Gout.—(*Detroit Medical Journal*, October, 1901):

℞

Potassii iodidi		ʒ ss
Linimenti saponis		f. ʒ ss
Olei cajuputi		
Olei cari	āā	f. ʒ ss
Spiritus rectificati	q. s. ad	f. ʒ viij

M. S.: Apply over part on lint and cover with protective.

DIGESTIVE TRACT.

Diarrhea in Tuberculosis.—(*Pacific Medical Journal*, October, 1901):

℞

Ichthoformi	gr. v
Tannalbin	
Bismuthi subgallatis	āā gr. x
Codeinae	gr. 1/4
Olei menthae piperitae	*m* 1/4

M. et fiat charta No. i.

S.: One such powder every two to six hous.

Catarrhal Jaundice.—(*Jour. Amer. Med. Ass'n*, November, 16, 1901):

℞

Acidi nitro-hydrochlorici	f. ʒ iv
Tincturae nucis vomicae	f. ʒ iij
Tincturae gentianae compositae	f. ʒ iij

M. S.: Teaspoonful three times a day after meals in water.

Gastric Catarrh.—Da Costa (*The Kansas City Medical Record*. November, 1901):

℞

Argenti nitratis	gr. ij
Extracti hyoscyami	gr. iij

M. et fiant pillulae No. xii.

S.: One pill three times a day.

Flatulent Dyspepsia.—Richardson (*Maryland Medical Journal*, October, 1901):

℞

Magnesii sulphatis	
Calcii phosphatis precipitati	
Pulveris carbo ligni	
Sulphuris sublimati	āā x

M. S.: Teaspoonful in water as required.

Or,

℞

Olei creosoti	*m* xij
Spiritus rectificati diluti	f. ʒ ss
Ammonii benzoatis	ʒ ij
Glycerini	f. ʒ vj
Infusi caryophylli	q. s. ad f. ℥ vj

M. S.: Teaspoonful in water as required.

EAR, NOSE AND THROAT.

Otorrhea.—(*Gaceta medica de Costa Rica*, September 15, from *New York Medical Journal*, November 23, 1901):

℞

Ferri perichloridi	ʒ ss
Alcoholis	
Aquae destillatae	āā ʒ j

M. S.: Three or four drops to be instilled into the external auditory meatus two or three times a day.

Diphtheria.—A. C. Kubicek (*The Chicago Medical Times*, September, 1901) recommends the following formula to be used as an inhalation:

℞

Eucalpol	
Creosoti	
Guaiacol	āā ʒ iij
Menthol	grs. xxx
Chloroformi	q. s. ad ℥ vj

M. S.: Use as ordinary inhalation.

Acute Rhinitis.—(*Jour. Amer. Med. Ass'n*, November 30, 1901):

℞

Quininae sulphatis	
Sodii salicylatis	āā gr. iij-iv
Camphorae monobromatae	gr. ss

M. et fiat capsula No. i.

S.: One such to be taken four or five times a day.

Also an inhalation of MacKenzie's consisting of the following:

℞

Tincturae opii camphoratae	f. ʒ ss
Tincturae benzoini compositae	f. ʒ j

M. S.: One teaspoonful to a pint of hot water to use as an inhalation three times a day.

Aphthae.—(*Merck's Archives*, November, 1901):

℞

Sodii boratis	gr. lxxv
Glycerini	f. ʒ vj
Aquae destillatae	q. s. ad f. ℥ vj

M. S.: Cleanse the mouth with the abbve several times a day.

Or,

℞

Sodii boratis	ʒ j
Aquae rosae	f. ʒ vj
Mellis rosae	f. ʒ x
Tincturae myrrhae	f. ʒ iij

M. S.: Apply to sore spots.

Nasal Disinfectant.—G. S. Ryerson (*The Louisville Monthly Journal of Medicine and Surgery*, November, 1901):

℞

Sodii biboratis	
Sodii bicarbonatis	
Sodii chloridi	āā ʒ ss
Sodii salicylici	gr. x
Listerine	
Glycerini	āā f. ʒ j
Aquae destillatae	q. s. ad f. ♁ viij

M. S.: Use as a spray.

SKIN DISEASES.

Frost Bite.—Lassar (*Jour. Amer. Med. Ass'n*, December 21, 1901):

℞

Acidi carbolici	ʒ ss
Unguenti plumbi	
Lanolini	āā ʒ x
Olei olivae	f. ʒ v
Olei lavendulae	f. ʒ ss

M. S.: As a local application.

Or,

℞

Ichthyol	
Resorcin	
Acidi tannici	āā ʒ iij
Aquae destillatae	f. ʒ ij

M. S.: Shake and apply twice daily, if the skin remains unbroken.

Miliaria.—G. H. Fox (*Photographic Atlas of the Diseases of the Skin*, Part XI) gives Anderson's prescription as follows:

℞

Pulveris camphorae	ʒ ss
Zinci oxidi	ʒ iss
Pulveris amyli	ʒ vj

M. S.: Use locally.

Lichen Planus.—G. H. Fox (*Photographic Atlds of the Diseases of the Skin*, Part X) gives Wehl's lotion for soothing the skin and allaying the itching in the early and spreading stage of the eruption:

℞

Naphtholis	ij
Glycerini	x
Alcoholis	ad c

M. S.: Use locally.

In the more chronic forms the following ointment is used by Unna.

℞

Hydrargyri chloridi corrosivi	gr. v
Acidi carbolici	gr. xx
Unguenti zinci oxidi	q. s. ad ℥ j

M. S.: Use locally.

An ointment recommended by G. H. Fox consists of the following:

℞

Olei rusci	*m* xx
Unguenti hydrargyri ammoniati	ʒ j

M. S.: Use locally.

Lupus Erythematosus.—G. H. Fox (*Photographic Atlas of the Diseases of the Skin*, Part XI) recommends, where the patches are dry and scaly, an ointment or plaster of salicylic acid, gradually increased in strength until the inflammatory reaction is as great as the patient will tolerate. He also gives the following formula from Broeg:

℞

Acidi salicylici	v
Acidi pyrogallici	x
Vaselini	ad c

M. S.: Use locally.

Leg Ulcers.—Rank (*Merck's Archives*, November, 1901):

℞

Pulveris camphorae	gr. v
Olei olivae	
Liquoris plumbi subacetatis	āā f. 3 ss
Unguenti hydrargyri ammoniati	3 ix

M. S.: Use locally.

Chafing in Children.—R. B. Elderice (*Merck's Archives*, November, 1901):

℞

Ichthyol	
Acidi borici	āā ʒ j
Tincturae benzoini compositae	f. 3 j
Petrolati	ʒ iss-ij

M. S.: Apply at each change of napkin.

Lichen Scrofulosis.—G. H. Fox (*Photographic Atlas of the Diseases of the Skin*. Part X) gives the ointment that Crocker recommends as follows:

℞

Liquoris plumbi subacetatis	*m* xv
Thymolis	gr. v
Olei cadini	*m* v
Vaselini	q. s. ad ʒ j

M. S.: Use locally.

℞

Iodinii puri	1
Olei morrhuae	1000

M. S.: Teaspoonful morning and evening.

To Abort Furuncles.—Bertran (*The Monthly Cyclopedia of Practical Medicine*, November, 1901):

℞

Aquae camphorae	f. ʒ iv
Tincturae myrrhae	f. 3 ij
Creosoti	*m* x
Glycerini	f. ʒ j

M. S.: Apply constantly in form of wet compress. It has been known to remove the most excruciating pain in three or four hours and will make surgical treatment unnecessary if begun in time and is constantly and faithfully applied.

Smallpox.—C. Begg (*Jour. Amer. Med. Ass'n*, November 23, 1901) recommends the following formula as soon as the vesicular stage is completed:

℞

Olei eucalypti	*m* v
Calaminae	3 iij
Zinci oxidi	ʒ ss
Glycerini	f. ʒ ss
Aquae calcis	q. s. ad Oj

M. S.: Apply with a camel's hair brush.

Eczema.—Hebra (*The Cleveland Medical Gazette*, November, 1901) advises for chronic eczema on the face:

℞

Acidi carbolici	f. 3 ij
Glycerini	
Etheris	āā f. ʒ j
Siritus vini recti	f. ʒ vj

M. S.: Use locally.

For vesicular eszema and eczema rubrum the author uses a phenol calomel paste as follows:

℞

Acidi carbolici	gr. x
Hydrargyri subsulphidi chloridi	gr. xx
Pulveris amyli	
Zinci oxidi	āā 3 ij
Petrolati	ʒ iv

M. S.: Use locally.

Ringworm.—(*The Post-Graduate*, November, 1901):

℞

Chrysarobini	gr. xxv
Ichthyol	*m* xv
Acidi salicylici	gr. x
Petrolati	ʒ j

M. S.: Apply to patches on scalp night and morning. An oiled silk cap must be worn, so that the chrysarobin is not carried to the face and cause dermatitis or conjunctivitis.

MISCELLANEOUS.

Acute Alcoholism.—J. M. Anders (*Medical News*, November 30, 1901):

℞

Sodii bromidi	ʒ j
Tincturae capsici	f. 3 j
Tincturae digitalis	f. 3 ss
Elixiris simplicis	q. s. ad f. ʒ ij

M. S.: Teaspoonful every three or four hours.

Thrombosis of the Femoral Vein in Typhoid Fever.—J. M. Anders (*Medical News*, November 30, 1901) recommends this ointment to be applied along course of vessels three times a day.

℞

Unguenti ichthyol	
Adepis lanae hydrosi	āā 3 ij
Unguenti belladonnae	ʒ ss

M. S.: Use locally.

Local Anaesthesia.—Terrier and Pereire (*Journal des praticiens*, October 19, from *New York Medical Journal*, December 7, 1901):

℞

Antipyrin	3 ss
Cocaine hydrochloratis	3/5
Aquae bullientis filtratae	f. 3 j

M. S.: One to three hypodermic injections can be given.

Agalactia (Deficiency of Milk).—(*Jour. Amer. Med. Ass'n*, December 7, 1901):

℞

Tincturae nucis vomicae	f. 3 iv
Calcii glycerophosphatis	gr. xv
Elixiris calisayae	f. ʒ iv

M. S.: Teaspoonful three or four times a day in water.

For Deep Seated Inflammation.—W. R. Slevin (*The Monthly Cyclopedia of Practical Medicine*, November, 1901, from *American Medicine*):

℞

Ichthyol	
Plumbi iodidi	āā gr. xlv
Ammonii chloridi	gr. x
Petrolati	q. s. ad ʒ j

M. S.: To be rubbed thoroughly into the affected part.

Hemiplegia After Apoplexy.—Hammond (*The Monthly Cyclopedia of Practical Medicine*, November, 1901, from *Jour. Amer. Med. Ass'n*):

℞

Zinci phosphidi	gr. iij
Extracti nucis vomicae	gr. x

M. et fiant pilulae No. xxx.
S.: One pill three times a day.

Tetanus.—L. Plessner (*Jour. Amer. Med, Ass'n*, November 16, 1901):

℞

Acidi carbolici	gr. ij
Glycerini	
Aquae	āā f. 3 ss

M. S.: To be used as an injection hypodermically twice a day.

Tubercular Meningitis.—Malba (*Medical Record*, December 7, 1901):

℞

Strontii bromidi	gr. xv
Chloralis	gr. vii ss
Syrupi valerianae	f. 3 vj
Syrupi menthae piperitae	f. ʒ ij

M. S.: Teaspoonful every half hour if necessary.

Chorea.—(*Jour. Amer. Med. Ass'n*, December 21, 1901):

℞

Sodii bromidi	
Potassii bromidi	
Antipyrin	āā ʒ j
Aquae menthae peperitae	q. s. ad f. ʒ j

M. S.: Teaspoonful three or four times a day, according to age.

Nights Sweats in Tuberculosis.—J. Strassberger (*Jour. Amer. Med. Ass'n*, December 21, 1901):

℞

Tannoformi	ʒ ss
Pulveris amyli	ʒ i ss

M. S.: Apply locally as a dusting powder by means of a pad of cotton wool.

Epilepsy.—W. A. Hammond (*Medical Record*, December 7, 1901):

℞

Zinci bromidi	ʒ j
Syrupi	q. s. ad f. ʒ iv

M. S.: Ten to fifty drops three times a day.

Da Costa recommends the following:

℞

Zinci valerianitis	gr. iij
Extracti belladonnae	gr. 1/3
Pulveris digitalis	gr. 1/4

M. et fiat pilula No. i.
S.: One pill three times a day.

Books Received.

Clinical Hematology. A Practical Guide to the Examination of the Blood with Reference to Diagnosis. By John C. DaCosta, Jr., M. D.; Assistant Demonstrator of Clinical Medicine, Jefferson Medical College; Hematologist to the German Hospital, Etc. Illustrated. 8vo. Published by P. Blakiston's Son & Co., 1012 Walnut Street, Philadelphia. 1901. Price, in cloth, $5.00.

Manual of Physical Diagnosis. For the use of Students and Physicians. By James Tyson, M. D., Professor of Medicine in the University of Pennsylvania and Physician to the University Hospital; Physician to the Philadelphia Hospital; Fellow of the College of Physicians of Philadelphia; Member of the Association of American Physicians, etc. Fourth Edition, Revised and Enlarged. With Colored and Other Illustrations. Published by P. Blakiston's Son & Co., 1012 Walnut St., Philadelphia. 1901. 12mo. Cloth, $1.50 net.

Book Notices.

The Diagnosis of Nervous and Mental Diseases. By Howell T. Pershing, M. Sc. M. D. Professor of Nervous and Mental Diseases in the University of Denver; Neurologist to St. Luke's Hospital, Consultant in Nervous and Mental Diseases to the Arapahoe County Hospital; Member of the American Neurological Association. Illustrated. 12 mo. Published by P. Blakiston's Son & Co., 1012 Walnut St., Philadelphia. 1901. Price, in cloth, 01.25 net.

Dr. Pershing has adopted a plan which has long seemed to us most rational and satisfactory for a work on diagnosis. This is nothing more nor less than the classification of nervous diseases according to the method used in the natural sciences, that is, all cases having a common symptom are grouped together, and then further classified by the minor differential symptoms. This naturally is a rather difficult thing to do, and perhaps Dr. Pershing has not succeeded as well as some subsequent writer will, who adopts the same method and has an opportunity of introducing improvements suggested by experience with the method. But Dr. Pershing deserves credit for undertaking this method, and for carrying it out in a thoroughly satisfactory manner.

To give an idea of what the method is we can say that diseases are classified as: Hemiplegia, monoplegia, paraplegia, paralysis of certain groups of muscles, as the eye, larynx, etc.; diseases characterized by ataxia, by tremor, by spasms, by trophic and vaso-motor systems, by localized pains, etc. Naturally this brings together some forms of disease that have little in common either pathologically or etiologically, but it must be confessed that as a fact of practical experience most physicians reach their diagnosis by a method very similar to that employed in the tables given in this work. Perhaps Dr. Pershing lays more stress upon the value of the history and the nature of the onset, etc., than do the majority of physicians, particularly those working in large hospitals where there is a considerable proportion of foreign-born parents; but otherwise, the tables, as far as they go, are exceedingly satisfactory. Naturally a great deal of the symptomatology of the nervous system must be omitted in a book whose diagnostic tables cover only 129 pages with a considerable number of illustrations in the text. But as the work claims to be merely an outline and is intended only to be used "as an adjunct to some complete treatise on nervous diseases," it cannot be blamed for its omissions unless they are material, and this does not seem to be the case. The introduction of 88 pages is delightfully written, and contains a considerable amount of suggestive material, and as most of this is the result of the writer's own experience, even the most experienced neurologist may derive some valuable hints from it.

Taking it altogether it is one of the most satisfactory books of limited size that has hitherto appeared in this language on the diseases of the nervous system, and is to be commended for the courage the author displays in introducing a comparatively new system of diagnostic tables.

[J. S.]

INDEX

Editorials.

Alcoholism, the treatment of, 269
Anesthesia, 115
Anesthesia, spinal, the untoward results of, 269
Arsenic, the action of, on the skin, 228

Bacteria resistant to acids, 190
Bright's disease, the treatment of acute, 268

Cacodyl and its derivatives in therapeutics, 44
Consumption, the Nordrach treatment of, in Ireland, 42
Crede, unguentum, in therapeutics, 116

Drugs, the knowledge of the action of, 151
Dysmenorrhea, the nasal treatment of, 80

Ecole Lailler, the, of the St. Louis Hospital, Paris, 190
Enteric fever, systematic cold bathing in the treatment of, 229

Finsen treatment, the, of lupus vulgaris, 7

Gastric therapeutics, recent progress in, 5
Gelatin, therapeutic value of, 6
Gynecology, the use of organic extracts, 79

Insane, schools for the, 228
Insomnia, faradization as a cure for, 117
Introductory, 3

Locomotor ataxia, movement therapy for, 118

Malta fever, 189.
Massage, the teaching of, in medical schools, 189
Medical science, a menace to, 41
Medicine, the practice of, in ancient times, 191

Ophthalmia neonatorum, the prophylaxis of, 114

Pneumonia, the treatment of croupous, 229
Poison and poisoners from two points of view, 154
President, the death of the, 151
Profession, the attitude of the, toward new remedies, 4
Puerperal eclampsia, therapeutics of, 153
Pure food law, the interpretation of the, 192

Remedies, new, the problem of the employment of, 228

Salicylic acid, the dangers of, 79
Salol, the use of, in pediatrics, 45
Silver preparations, the antiseptic power of, 191
Smallpox and vaccination, 152
Sodides, the employment of the, 267
Strychnine, dosage and mode of administration of, 114
Substitute, a, for vaccination and diphtheria antitoxin, 193

Tachycardias of the menopause, 153
Tobacco smoke, the toxicology of, 41
Tubercular peritonitis, the treatment of, 81
Tuberculosis, British Congress on, the conclusions of the, 193
the employment of cinnamic acid in, 43
treatment of, with urea, 151
and a meat diet, 116

Uratic deposits, the solvent action of alkalies and the newer remedies on, 115

Vaseline injection, subcutaneous, 82

Zomotherapy in phthisis, 117

Original Articles.

Aceton-chloroform (chloretone) in epilepsy, 86
Anemia, pernicious, in the light of the 244, 289
Atropin as a physiological antidote in morphin poisoning, 9
Auerbach, A., Ph. G., M. D., gonorrhea and chancroids; their treatment, 173

Barnes, Albert C., A. M., M. D., the pharmacology of iron, with especial reference to a new compound of iron, 56
The selective action on the central nervous system of some new morphin derivatives, 265
Bates, W. H., M. D., the use of aqueous extract of the suprarenal capsule in disease of the ear, 58
Biernacki, Edmund, M. D., the hematological diagnosis in practical medicine, 124
Blair, Thos. S., M. D., a practical ozone generator actuated by the X-ray induction coil, 60
Bright's disease, on the treatment of, 46
Brocq, Prof. L., and Mess. Civatte and Fraisse, preliminary studies on the intra-muscular injections of iodocacodylate of mercury in syphilis, 241
Carbolic acid as an internal remedy, 27
Cardiac therapeutics, principles of, in recent valvular disease, 52
Caribou or water-buffalo virus, 155
Carsickness; cause and treatment, 280
Cattermole, B. H., M. D., scurvy in the mountains of Colorado, 121
Charles A., M. D., caribou or water-buffalo virus, 155
Chapelle, Ph., M. D., yeast treatment of gonorrhea and of gonorrheal vaginitis, 241
Coley, Thomas Luther, A. B., M. D., the therapy of pulmonary tuberculosis, a study of some form of medical treatment, 159

Dessau, S. Henry, M. D., carbolic acid as an internal remedy, 27
Dickey, Wm. A., A. M., M. D., typhoid fever, 195
Diphtheria, a note on the treatment of, 202
its management and treatment, 203
Disease, the treatment of, by local application of superheated dry air, 22

Ear disease, the use of aqueous extract of the suprarenal capsule in, 58
Edsall, Frank H., M. D., the pure active principle of suprarenal extract and its wide range of application in ophthalmology and rhinology, 27
Epithelial cancer treated by chemical caustics, 119
Espina y Capo, the importance of the X-rays as a means for the early diagnosis of tuberculosis, 251

Exophthalmic goitre, the treatment of, with special reference to the use of sodium phosphate, 155
Flesh-colored powders, ointments and pastes, 282
Fussel, M. H., M. D., shall the physician in cities dispense medicines? 120

Gibson, Dr. Maris, some notes on new remedies, with a case of poisoning by the diacetyl-acid-ester of morphine, 55
Goldschmidt, Hugo, M. D., flesh-colored powders, ointments and pastes, 282
Gonorrhea and chancroids; their treatment, 172
Gordon, Alfred, M. D., the effect of nitroglycerine in vascular disturbances of the brain, with reports of two cases, 278
Green, Edgar Moore, A. M., M. D., a few notes on the salts of sulpho- carbolic acid, 203
Hematological diagnosis, the, in practical medicine, 174
Hysterical pain and static electricity, 198

Ichthyol in tuberculosis, 294
Inorganic substances, theory of the action of, 271
Intestinal obstruction, a review of the treatment of, by atropin, 122
Iron, the pharmacology of, with especial reference to a new compound of iron, 56

Jacobi, Mary Putnam, M. D., hysterical pain and static electricity, 198

Le Breton, Prescott, M. D., treatment of disease by local application of superheated dry air, 22
Leucorrhea and gonorrheal vaginitis, yeast treatment of, 241
Long, Eli H., M. D., principles of cardiac therapeutics in recent valvular disease, 52

Medical science in the nineteenth century, 283
Medicinal remedies, artificial, the industry of, 48
Morphine derivatives, the selective action of some new, on the central nervous system, 205

New remedies, some notes on, with a case of poisoning by the diacetyl-acid-ester of morphine, 55
Nitro-glycerine, on the therapeutic action of; a valuable drug for relieving muscular spasm, 230
the effect of, in vascular disturbances of the brain, with reports of two cases, 278

Organic medical substances, theories on the action of, and the relation of chemical constitution to action, 230
Ozone generator, a practical, actuated by the X-ray induction coil, 60

Pagel, J., M. D., medical science in the 19th century, 283
Pel, P. K., M. D., the treatment of croupous pneumonia, 89
Physicians, shall the, in cities dispense medicine? 120, 158
Pneumonia, croupous, a further report on serum-therapy in, 82
the treatment of, 89
Randall, H. E., M. D., on therapeutic action of nitro-glycerine: a valuable drug for relieving muscular spasms, 239

Formulæ

Acid tonic, 110
Acne, 109, 186
Agalactia, 307
Albuminuria, acute, after scarlet fever, 265
Alcoholism, acute, 307
Alopecia communis, 263
following fevers, 109
neuropathic, 76
Amenorrhea, 38, 74, 108, 265
Anemia, 187, 226
Anesthesia, Schleich's, 75
local, 307
Aneurysm, 265
Angina pectoris, 111, 265
Anodyne, an, and antispasmodic, 74
Anus, fissure of the, 150
Aphonia, catarrhal, 223
Aphthae, 306
Ascites, 188, 265
Aseptic ointment, 188
Asthma, 111, 188, 188, 225, 225, 225, 305

Bedsores, ,to prevent, 147, 226
Bile ducts, catarrh, with jaundice, 224, 265
Blackeye, 188
Blepharitis, squamous, 226
Blood poisoning, 225
Boils, 225
Bronchitis, 148
acute, 262, 262
capillary, in children, 264
chronic, 111, 262, 263
with asthma, in children, 185
Bronchostenosis, spasmodic, 305
Burns, 187, 225

Cardiac dropsy, 188
diuretic in, 111
in children, 109
Cathartic lemonade, 226
Chafing in children, 307
Chafing of the skin, 186
Chalazion, 150, 264
Chilblains, 225
Children's summer diarrhea, 109
Cholera infantum, 109
morbus, 111
Chorea, 150, 306
Clavus, 48
Coccogodynia, 266
Comedones, 76
Constipation, habitual, 224
in children, 76, 76
Coryza, 74, 148
Croup, 109
Cutaneous cancer, 147
Cystitis, acute, 111

Dandruff cure, 147
Dentifrice, astringent, 187
Diabetes mellitus, 150, 226
Diaphoresis, to produce, 146
Diarrhea, 265
and dysentery, 149
chronic, 110
fermentative, 150, 264
fetid, 224
in children, 38, 76
typhoid fever, 223
lienteric, 264
mixture, 150
obstinated, 223
serous in nurslings, 149
Diphtheria, 38, 306
convalescent stage of, 305
Diuretic mixture, a good, 188
Dropsy, 110
atonic, 188
cardiac and renal, 150
Dysentery, 150, 186, 186, 264, 264
Dysmenorrhea, 74, 74
Dyspepsia, flatulent, 110, 186, 186, 306
of hepatic disease, 186

Earache, 111, 111, 185
Eczema, 76, 76, 108, 307
Emetic for children, 264, 264
Emulsions, 148
Enteritis, tuberculous, 186
Enuresis, 76
Epilepsy, 308
Epistaxis, 75
Erysipelas, 147, 225
facial, 109, 186
Eyelashes, falling of, 76

Feet, perspiring, 38
swollen, tender or sweating, 111
Fetid breath, 75
Flatulence, 149
Fly and mosquito bites, 147
Freckles, 109
Frost bite, 308
Furuncles, 109, 186, 307
of the ear, 225
Galactorrhea, 266

Gastric catarrh, 306
Gastric atony, 223
fermentation, 224
fever, 224
ulcer, 110, 264
Gastro-intestinal diseases in children, 185, 185
Gonorrhea, 75, 75, 75, 187, 225, 263
Gonorrheal urethritis, 187
vaginitis, 150, 187
Gout, 111, 111, 306
Gouty attacks, 305

Hair tonic, 187
Hay fever, 38, 74, 147, 148
Headache, nervous, 265
Heart disease, hypnotic in, 266
failure in typhoid fever, 110
Hemiplegia after apoplexy, 308
Hematemesis, 265
Hemoptysis, 110, 225
Hemorrhoids, 75, 150, 265
external, 150
internal, 150
Herpes, 187
simplex, 147
Hiccough, 110
persistent, 266
Hyperchlorhydria, pain in, 149
Hyperidras, 187

Ichthyosis, 263
Impetigo contagiosa, 38, 263
Indigestion, 73
Inebriety, 226
Infant feeding, 149
Infantile colic, 185
Inflammation, deep-seated, 38, 307
Influenza, 77
Insect bites, 109
Insomnia, 111
of hysteria, 226
Intestinal catarrh, acute, 149
worms, 188
Ivy poisoning, 61

Jaundice, catarrhal, 305
Joint affections, 224

Keloid, 264
Keratosis follicularis, 263

Laxative for children, 76
Leg ulcers, 75, 109, 187, 307
Leukorrhea, 108
Leukorrhoids, 226
Lichen plains, 306
Lithemia, 150
Lotion for the skin, 225
Lumbago, 38, 73, 149
Lupus erythematous, 307
Lymphatic gland, enlarged, 188

Malarial cachexia, 188
fever, 150
hematuria, 150
Mastitis threatened, 226
Meno- and metrorrhagia, 74
Mercurial salivation, 111, 150
Miliaria, 306
Mosquito bites, 38

Nasal catarrh, 74, 147, 226
douche, 185
Nasal disinfectant, 306
Nasopharynx, antisepsis of, 74
Nervous symptoms of the menopause, 265
Neuralgia, 73, 73, 111, 305
Neuralgic headache and intercostal neuralgia, 185
Neuritis, local applications of turpentine for, 38
Nipples, fissures of the, 225
to prevent sore, 225
Nose insufflation, 74
Nostrils, crusts and fissures of the, 147

Oleum morrhuae to children, 75
Orchitis, ointment, 187
Organo therapy, 77
Otitis media, suppurative, 111
Otorrhea, 306
Otorrhea, chronic, 186

Paralysis agitans, 77, 150, 188
Pelvic congestion, 108
Pericarditis with effusion, 188
Pertussis, 149, 149, 185, 185, 224, 264, 305
vomiting in, 75

Phthisis, cough in, 149, 225
laryngeal, 110
night sweats in, 110
Pleurisy with effusion in children, 264
Pneumonia, 37, 262
in children, 76
Prostatic hypertrophy, 187
Prostatorrhea, 187

Pruritus ani, 109, 263
cutaneous, 147
vulvae, 263
in diabets, 147
Rheumatic joints, inflamed, 306
Rheumatic pain, 74
Rheumatism, 111, 111, 185, 185, 224, 224
acute, 148
chronic, 224, 263
in children, 148, 185
Rhinitis, acute, 306
Rhinitis, eczematous, 185
Rhus gargle, 223
Rickets, 110
Ringworm, 307
Ringworm of the scalp, 186
Rubella, 149

Salt solution, 75
Scabies, 76
Scarlet fever, 149
nasotonsillar affections in, 109
sore throat in, 263
Sciatica, 73, 185, 224, 263
Scrofulosis, 110
Seasickness, 111
Shampoo receipt, 187
Sleep, to produce, 265
Smallpox, 307
Smallpox, pitting in, 224
Sprains, 150
Stomatitis,110
Sulphur dressing, 226
Sunburn, 77, 108, 147
Sycosis, subnasal, 147
Syphilides, palmar, 76, 186
pustular, 186

Tabes, to stimulate circulation in, 188
Teeth, to prevent loosening of, 188
Tetanus, 308
Thrombosis of the femoral vein in typhoid fever, 307
Tinea, 109
carcinata, 76
Tonsillitis, 111, 223, 263
acute, 223
follicular, 75, 185
Toothache, 73, 148, 149, 224
Tracheobronchitis in children, 264, 305
Tubercular diarrhea, obstinate, 110
laryngitis, 110
meningitis, 148, 305
Tuberculosis, 37, 148, 149, 305, 305, 305
internal, in infants, 148
Tympanites, 265
in infants, 109
Typhoid fever, 149, 149, 149
heart failure in, 188
diarrhea, 264, 306
night sweats in, 308

Uremia, 77
Urticaria, 108, 147, 186
chronic, 147
Uterine subinvolution, 188

Varicose veins, 225, 226
Vomiting in cerebral tumors, 188

Warts, 109

Book Reviews.

Ayers, Edward A., M. D., physical diagnosis in obstetrics, 78

Butler, Glentworth Reeve, A. M., M. D., diagnosis of internal medicine, 266

Cohen, Solomon Solis, A. M., M. D., a system of physiologic therapeutics, 39, 77, 78

International Medical Annual, 112, 112

Mays, Thomas J., A. M., M. D., consumption, pneumonia and their allies, 112

Merck's 1901 manual of the materia medfor the practising physician and for the practicing physician and surgeon, 39

Pershing, Hawell T., M. Sc., M. D., the diagnosis of nervous and mental diseases, 308

Potter, Samuel O., A. M., M. D., M. R. C. P., London, a handbook of mater'a medica, pharmacy and therapeutics, 39

Reed, Chas. A. L., A. M., M. D., a textbook of gynecology, 78

Tanner, Thomas Hawkes, M. D., F. L. S., memoranda of poisons, 39

Wainwright, J. W., M. D., a syllabus of new remedies and therapeutic measures with chemistry, physical appearance and therapeutic application, 77

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TABLE OF CONTENTS.

EDITORIAL.

A Menace to Medical Science 41
The Toxicology of Tobacco Smoke 41
The Nordrach Treatment of Consumption in Ireland 42
The Employment of Cinnamic Acid in Tuberculosis 43
Cacodyl and its Derivatives in Therapeutics 44
The Use of Salol in Pediatrics 45

ORIGINAL ARTICLES.

On the Treatment of Bright's Disease. By JAMES TYSON, M.D. 46
The Industry of Artificial Medicinal Remedies. By J. W. WAINWRIGHT, M.D. . 48
Principles of Cardiac Therapeutics in Recent Valvular Disease. By ELI H. LONG, M. D. 52
Some Notes on New Remedies; With a Case of Poisoning by the Diacetyl-Acid-Ester of Morphine. By DR. MARIS GIBSON 55
The Pharmacology of Iron; With Especial Reference to a New Compound of Iron. By ALBERT C. BARNES, A.M., M.D., and H. HILLE, PH.D. 56
The Use of Aqueous Extract of the Supra Renal Capsule in Disease of the Ear. By W. H. BATES, M.D. 58
Subnitrate of Bismuth as a Remedy in Obstruction of the Bowel. By H. M. SHALLENBERGER, M. D. 59
A Practical Ozone Generator Actuated by the X-Ray Induction Coil 60
Abstracts of Therapeutic Literature . . 61-73
Formulæ 73-77
Book Notices 77
Books Received 78

It is designed to make THERAPEUTIC MONTHLY the medium of communication for the leaders and teachers in this department of Medicine and to place promptly before subscribers original papers and the latest literature bearing on the subject. The policy of the Journal will be dignified and temperate, and an attempt will be made to encourage the development of rational therapeutics, while no paper will be rejected which suggests remedies or methods of treatment which seem reasonable, or have been sustained by the results of actual trial fairly reported.

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TABLE OF CONTENTS.

EDITORIAL.

The Dangers of Salicylic Acid 79
The Use of Organic Extracts in Gynecology 79
The Nasal Treatment of Dysmenorrhea 80
Treatment of Tubercular Peritonitis . . . 81
Subcutaneous Injections of Vaseline . . 82

ORIGINAL ARTICLES.

A Further Report on Serum Therapy in Croupous Pneumonia. By J. C. WILSON, M.D., and H. F. PAGE, M. D. Philadelphia. 82
A Note on Aceton-Chloroform (Chloretone) in Epilepsy. By WHARTON SINKLER, M.D., Philadelphia 86
The Treatment of Croupous Pneumonia, Critically Considered. (A Translation). By P. K. PEL, M.D., Amsterdam. . 89
Abstracts of Therapeutic Literature . . . 101
Formulæ 108
Book Notices 112

It is designed to make THERAPEUTIC MONTHLY the medium of communication for the leaders and teachers in this department of Medicine and to place promptly before subscribers original papers and the latest literature bearing on the subject. The policy of the Journal will be dignified and temperate, and an attempt will be made to encourage the development of rational therapeutics, while no paper will be rejected which suggests remedies or methods of treatment which seem reasonable, or have been sustained by the results of actual trial fairly reported.

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TABLE OF CONTENTS.

EDITORIAL.

The Dosage and Mode of Administration of Strychnine 113
The Treatment of Tuberculosis with Urea and a Meat Diet 113
The Prophylaxis of Ophthalmia Neonatorum 114
The Solvent Action of Alkalies and the Newer Remedies on Uratic Deposits . 114
Anesthesia 115
Unguentum Crede in Therapeutics . . . 116
Zomotherapy in Phthisis 117
Faradisation as a Cure for Insomnia . . 117
Movement Therapy for Locomotor Ataxia 118

ORIGINAL ARTICLES.

Report of Two Cases of Epithelial Cancer Treated by Means of Chemical Caustics. By JAY F. SCHAMBERG, M. D., Philadelphia 119
Shall the Physician in Cities Dispense Medicines? By M. H. FUSSELL, M. D., Philadelphia 120
Scurvy in the Mountains of Colorado. By G. H. CATTERMOLE, M. D., Boulder, Colorado 121
A Review of the Treatment of Intestinal Obstruction by Atropin. By JOSEPH SAILER, M. D., Philadelphia 122
The Hematological Diagnosis in Practical Medicine. (A Translation.) By EDMUND BIERNACKI, M. D., Warsaw . . . 124
Abstracts of Therapeutic Literature . . 136
Formulæ 147

It is designed to make THERAPEUTIC MONTHLY the medium of communication for the leaders and teachers in this department of Medicine and to place promptly before subscribers original papers and the latest literature bearing on the subject. The policy of the Journal will be dignified and temperate, and an attempt will be made to encourage the development of rational therapeutics, while no paper will be rejected which suggests remedies or methods of treatment which seem reasonable, or have been sustained by the results of actual trial fairly reported.

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TABLE OF CONTENTS.

EDITORIAL.

The Death of the President 151
Treatment of Tuberculosis with Urea. . 151
The Knowledge of the Action of Drugs. 151
Small Pox and Vaccination. 152
Therapeutics of Puerperal Eclampsia. . 153
The Treatment of the Tachycardias of the Menopause. 153
Poisons and Poisoners from Two Points of View 154

ORIGINAL ARTICLES.

Caribou or Water-Buffalo Virus. By CHARLES A. CATTERMOLE, M.D., of Paranaque, P. I. 155
The Treatment of Exophthalmic Goitre with Special Reference to the Use of Sodium Phosphate. By JOSEPH SAILER, M. D., of Philadelphia 155
Shall Physicians in Cities Dispense Medicines? By EDWARD G. RHOADS, M.D., of Philadelphia 158
The Therapy of Pulmonary Tuberculosis; a Study of Some Forms of Medical Treatment. By THOMAS LUTHER COLEY, A.B., M.D., of Philadelphia 159
The Climatic Treatment of Tubercular Consumption. By T. MELLOR TYSON, M.D., of Philadelphia 169
Gonorrhea and Chancroids: Their Treatment. By N. A. AUERBACH, Ph.G., M.D., of New York. 172
Pernicious Anemia in the Light of the Modern Toxin Hypothesis. A translation. By OSSIAN SCHAUMAN, M. D., of Helsingfors, Finland. 178

ABSTRACTS.

Abstracts of Therapeutic Literature . . . 177

FORMULÆ.

Miscellaneous Formulae 185

It is designed to make THERAPEUTIC MONTHLY the medium of communication for the leaders and teachers in this department of Medicine and to place promptly before subscribers original papers and the latest literature bearing on the subject. The policy of the Journal will be dignified and temperate, and an attempt will be made to encourage the development of rational therapeutics, while no paper will be rejected which suggests remedies or methods of treatment which seem reasonable, or have been sustained by the results of actual trial fairly reported.

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TABLE OF CONTENTS.

EDITORIAL.

Malta Fever 189
The Teaching of Massage in Medical Schools 189
The "Ecole Lailler" of the St. Louis Hospital, Paris 190
Bacteria Resistant to Acids 190
The Antiseptic Power of Silver Preparations 191
The Practice of Medicine in Ancient Times 191
The Interpretation of the Pure Food Law 192
The Conclusions of the British Congress on Tuberculosis 198
A Substitute for Vaccination and Diphtheria Antitoxin 198

ORIGINAL ARTICLES.

Typhoid Fever. By WM. A. DICKEY, A.M., M.D., of Toledo, Ohio 194
Hysterical Pain and Static Electricity. By MARY PUTNAM JACOBI, M.D., of New York City, N.Y. 198
A Note on the Treatment of Diphtheria. By JOHN M. SWAN, M.D., of Phila., Pa. . 202
A Few Notes on the Salts of Sulpho-Carbolic Acid. By EDGAR MOORE GREEN, A.M., M.D., of Easton, Pa. 208
Diphtheria—Its Management and Treatment. By WM. H. TERRELL, M.D., of Stilesville, Ind. 208
The Selective Action on the Central Nervous System on Some New Morphine Derivatives. By ALBERT C. BARNES, M. D., of Philadelphia, Pa. 205
Pernicious Anemia in the Light of the Modern Toxin Hypothesis. By OSSIAN SCHAUMAN, M.D., of Helsingfors, Finland, (Continued) 209

ABSTRACTS.

Abstracts of Therapeutic Literature . . . 211

FORMULÆ.

Miscellaneous Formulae 228

BOOK NOTICES.

Book Notices 228

It is designed to make THERAPEUTIC MONTHLY the medium of communication for the leaders and teachers in this department of Medicine and to place promptly before subscribers original papers and the latest literature bearing on the subject. The policy of the Journal will be dignified and temperate, and an attempt will be made to encourage the development of rational therapeutics, while no paper will be rejected which suggests remedies or methods of treatment which seem reasonable, or have been sustained by the results of actual trial fairly reported.

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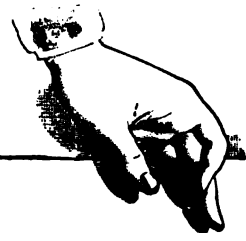

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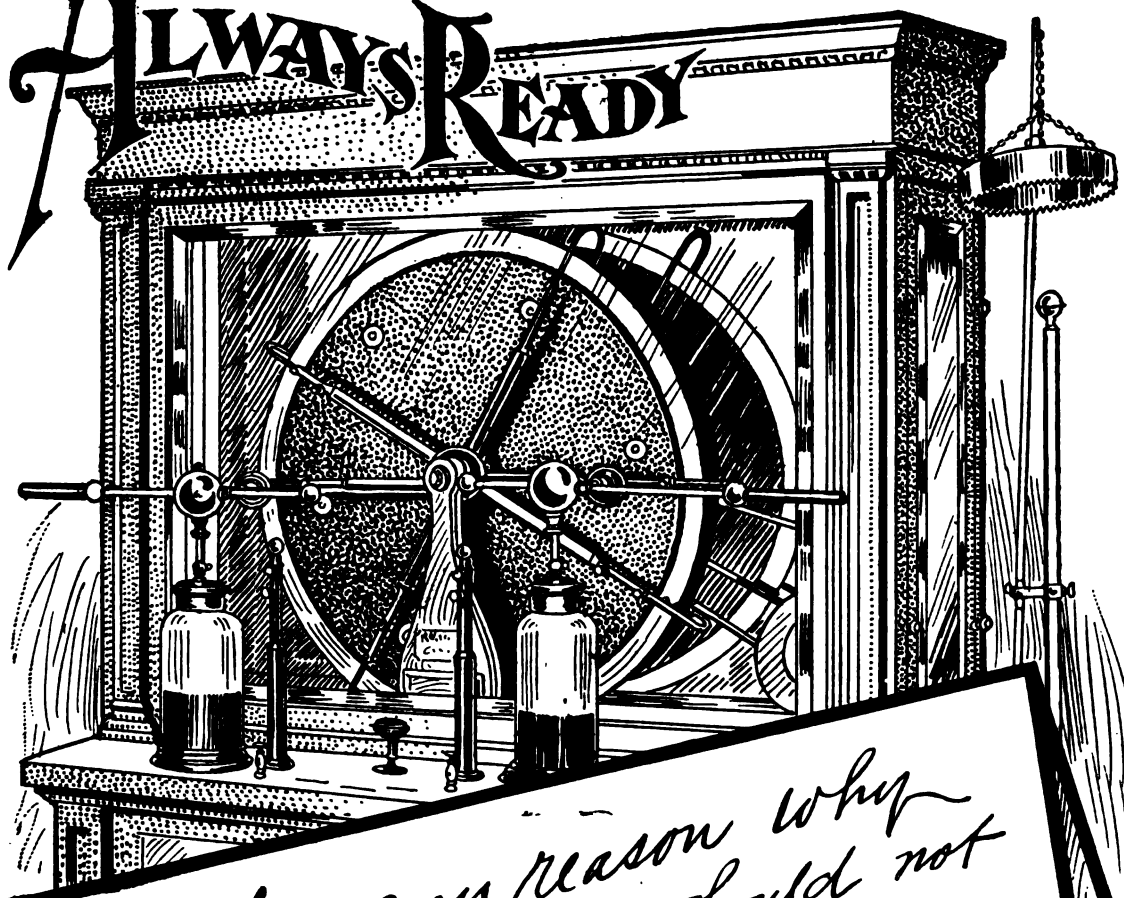

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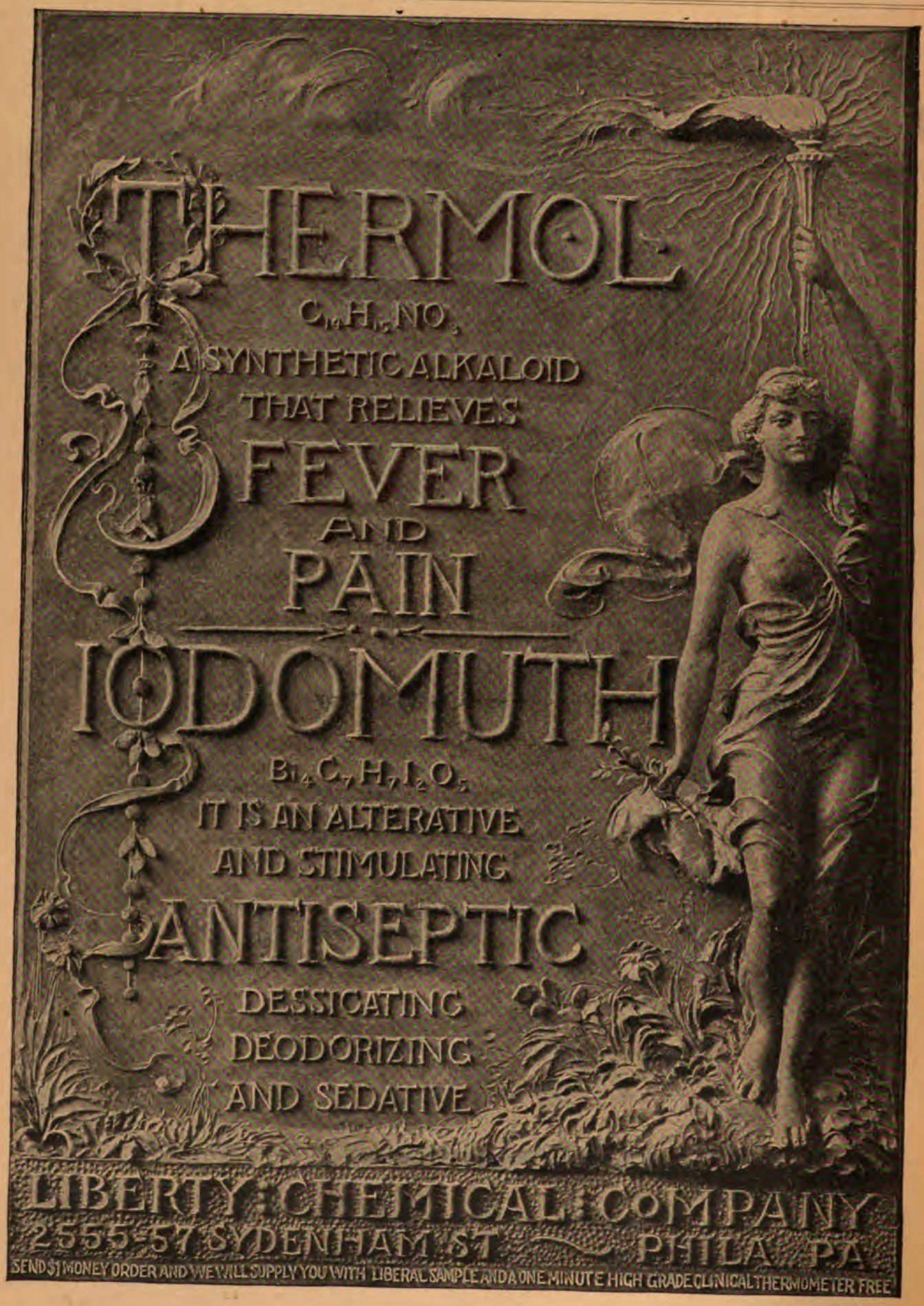
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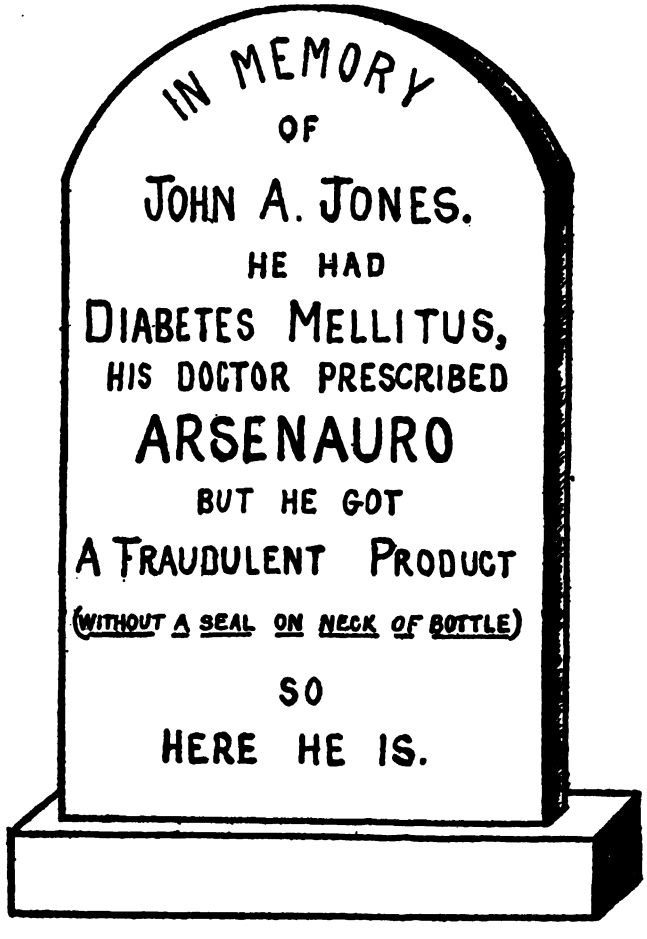

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TABLE OF CONTENTS.

EDITORIAL.

The Action of Arsenic on the Skin. . . . 227
The Problem of the Employment of New Remedies 228
Schools for the Insane 228
Systematic Cold Bathing in the Treatment of Enteric Fever 229
The Treatment of Croupous Pneumonia 230

ORIGINAL ARTICLES.

Theories on the Action of Organic Medical Substances and the Relation of Chemical Constitution to Action. By J. W. WAINWRIGHT, M.D., of New York . 230
On Therapeutic Action of Nitro-Glycerin: A Valuable Drug for Relieving Muscular Spasms. By H. E. RANDALL, M.D., of Lapeer, Mich 239
Yeast Treatment of Leucorrhea and of Gonorrheal Vaginitis. By PH. CHAPELLE, M.D., of Paris 241
Preliminary Studies on the Intra-Muscular Injections of Iodo-Cacodylate of Mercury in Syphilis. By Professor L. BROCQ and Messrs. CIVATTE and FRAISSE, of Paris. Translated by EDMUND L. GROS, of Paris. 241
Pernicious Anemia in the Light of the Modern Toxin Hypothesis. By OSSIAN SCHAUMAN, M.D., of Helsingfors, Finland, (Continued) . A translation 244
The Importance of the X-Rays as a Means for the Early Diagnosis of Tuberculosis. By ESPINA Y CAPO, of Madrid 251

ABSTRACTS.

Abstracts of Therapeutic Literature . . . 253

FORMULÆ.

Miscellaneous Formulae 212

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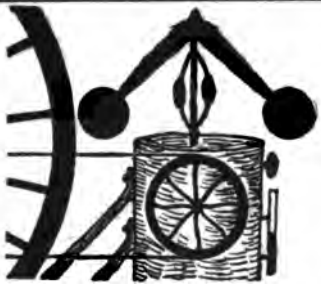

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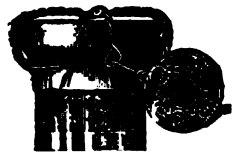

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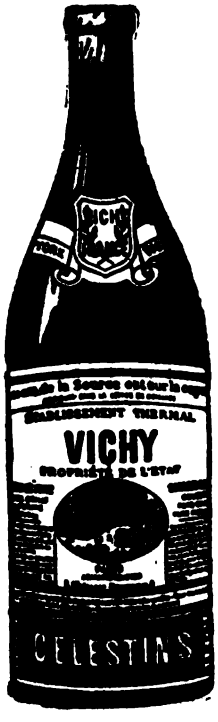

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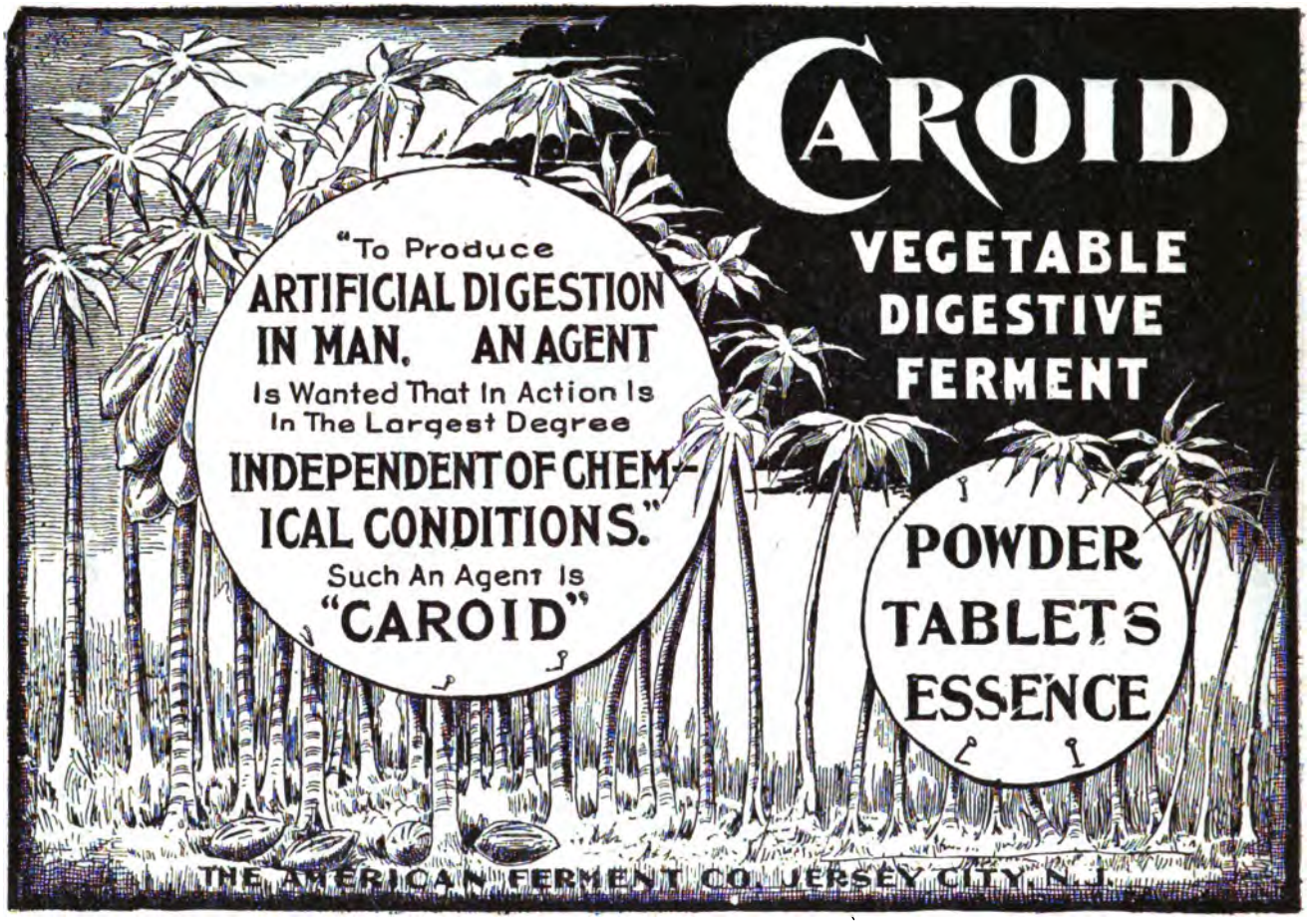

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The Vibratile is a portable electro-magnetic device for Massage by Vibration. The number of Vibrations, and their force, can be regulated from 500 to 3500 strokes per minute, and localized by the loop or guard surrounding the vibrating piece. An important feature of the Vibratile is that it conveys the various methods of general massage, i. e., kneading, stroking, rolling and friction, so easily controlled that it may be used over the most sentitive part, yet so strong as to be beneficial for the deep seated tissues. No special skill is required to operate the Vibratile and it takes only 3 to 8 minutes to give a thorough massage to any part of the body. The instrument weighs eight ounces, and the outfit, including batteries, cord and case 10 pounds.

The Vibratile is effective in the treatment of Myalgia, Sciatica, Neuralgia, Insomnia, Deafness, and other conditions where stimulation is indicated. In case of Rheumatism, Neurosis, Defective Capillary Circulation, and like conditions it has positive beneficial effects. Booklet on VIBRATILE MASSAGE on request.

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INDISPENSABLE in the treatment of NERVOUSNESS.

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Neurilla contains the essential active principles of scutellaria and aromatics.

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A therapeutically tested scientific preparation, that has invariably been found possessed of the greatest efficiency, in Exophthalmic Goitre, Catarrhal Jaundice, Hepatic Torpor, Functional Neuroses, Scrofula, Rickets, and a most valuable aperient and cholagogue. This solution obviates the necessity of administering ponderous doses of the salt itself, and combines concentration and therapeutic activity without any disagreeable after-effects. Our solution of phosphate of sodium is not only of immaculate chemical purity, but has responded ideally to physiological tests. It is now recognized as the most satisfactory method of administering sodium phosphate

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of the neurasthenic undergoes a constant depletion. Frequent drafts upon the reserve store of nervous force reduce the available balance of energy from day to day; if Nature's balance is not fortified by deposits of vitality, physical bankruptcy is the inevitable result. The primal essence of vital force and energy consists of good, healthy, well-oxygenated blood. **Pepto-Mangan** ("Gude") contributes the essential haemoglobin, and aids in the formation of red globules by supplying neutral organic iron and manganese in a condition for immediate and complete assimilation. It thus quickly "makes good" the existing deficit and assists the neurasthenic to maintain and increase his vital bank account.

Pepto-Mangan ("Gude")

provides a readily available pabulum for corpuscular nutrition and increase and by supplying vital force to the blood stream also feeds and vivifies the nervous system, establishes physiological equilibrium and restores nervous equipoise.

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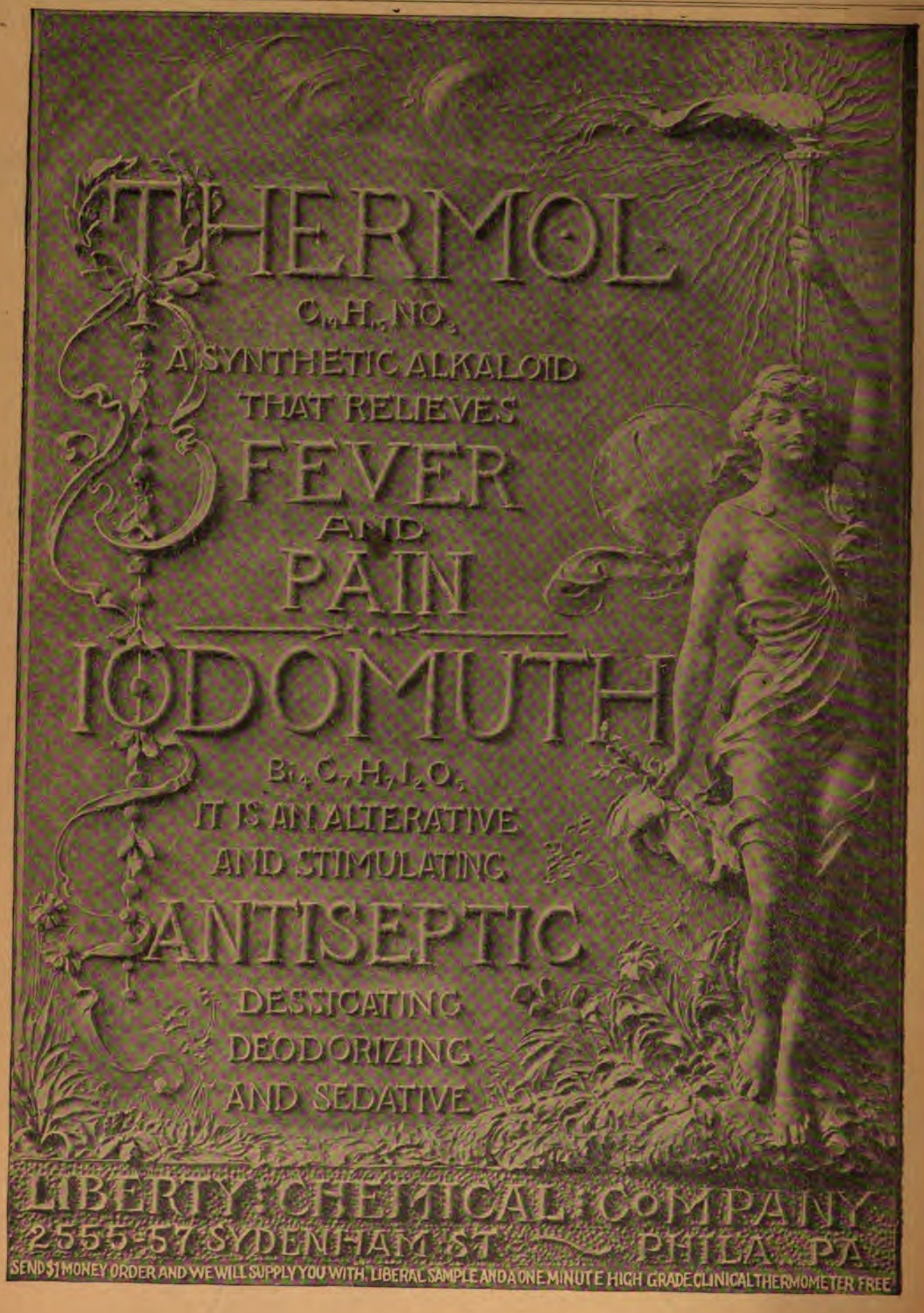
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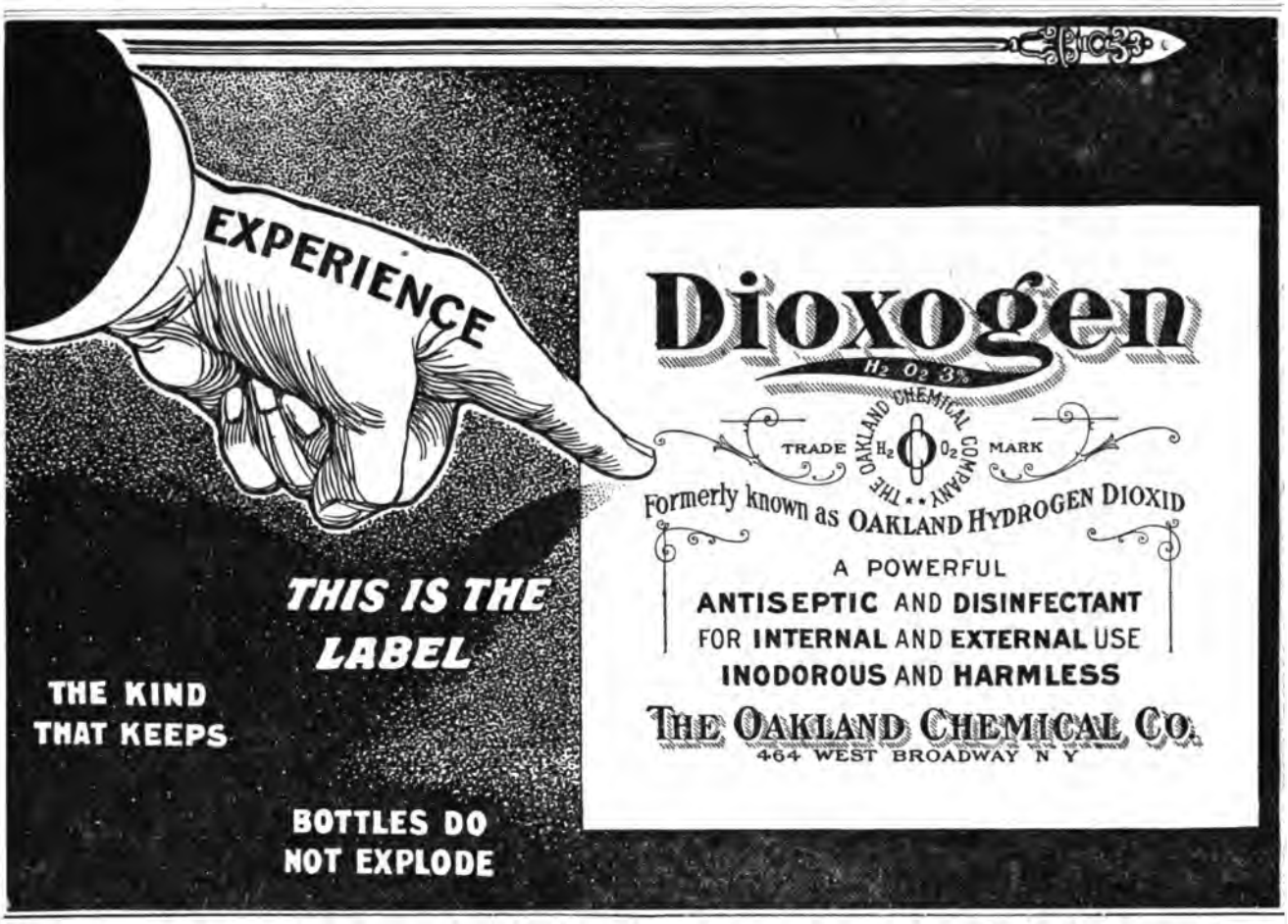

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IT HAS PROVEN ITSELF, IN PROPER DOSAGE, A TRUE PALLIATIVE SPECIFIC.

"I have achieved wonderful results by its use in cases of amenorrhea and dysmenorrhea."—*Lyman Hall Wheeler, M. D., Harlem Hospital, N. Y. City.*

TRY IT, DOCTOR, AND YOU WILL BE PLEASED AND SURPRISED AT THE RESULTS.

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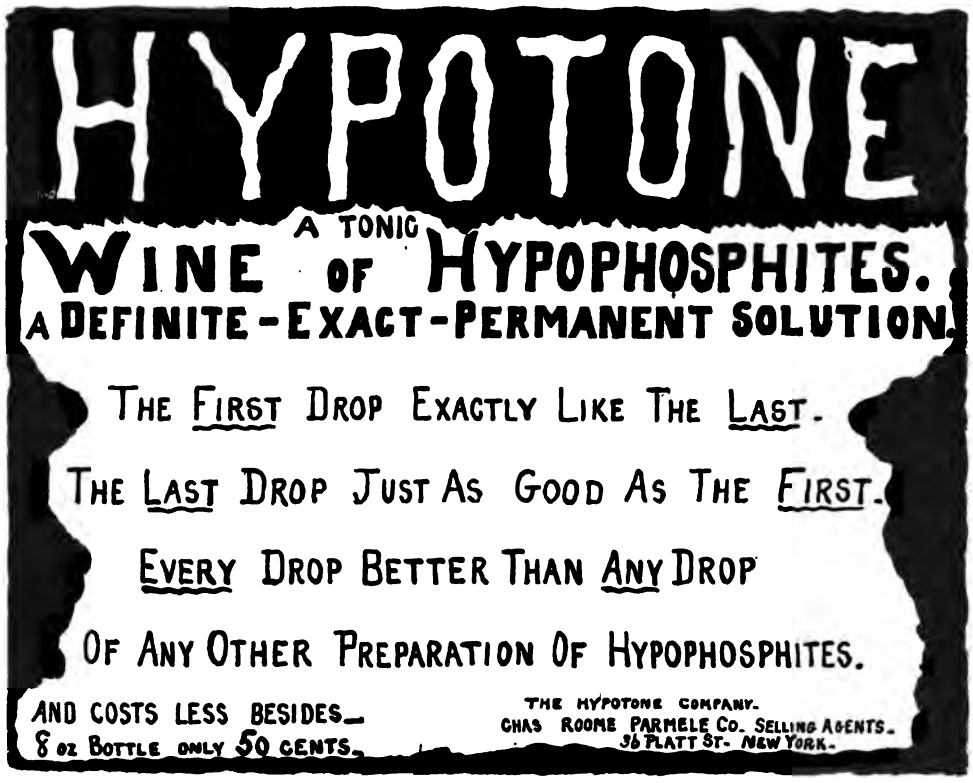

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A specific, for catarrhal conditions of the gastro-intestinal tract and their various sequels. An antiseptic beverage, which prevents fermentation, relieves nausea and gastric distress. A most valuable remedy in mucous diarrhea, in the gastro-intestinal derangements accompanying influenza, and of prompt efficacy in hyperchlorhydria. In cases of secondary anemia, and especially in gastro-intestinal autointoxication, Man-A-Cea has been found to be scientifically curative. A valuable adjuvant in chlorosis in which it aids the absorption of iron, and prevents the constipation so often accompanying the administration of that drug. In gout, chronic rheumatism and in all conditions attended with defective elimination, Man-A-Cea water acts as a natural diuretic and assists to a remarkable extent in the elimination of by-products. It is unsurpassed as a disinfectant of the genito-urinary tract. Its usefulness has been attested by leading authorities, and confirmed by the statement of many happy patients.

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It contains Grains per Gallon:

CHLORIDE OF SODIUM	1.361
SULPHATE OF POTASSIUM	6.764
SULPHATE OF CALCIUM	60.417
SULPHATE OF MAGNESIUM	4.335
SULPHATE OF ALUMINUM	11.337
SULPHATE OF MANGANESE	2.857
SILICIC ACID	1.445
VEGETABLE AND VOLATILE SUBSTANCES	8.239
TRACES OF SULPHATE OF IRON, COBALT, AND FREE NITRIC ACID.	

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CASE SHOWING BLOOD CHANGES.

	Red Cells	Hæmatin	White Cells
Aug. 3-1901	3,000,000	35%	12,000
" 17 "	3,275,000	47%	16,000
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	52% increase	51% increase	33-1/3 increase

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For general anaesthetic purposes by inhalation, **GRADUATED KELENE** (a Pure Chloride of Ethyl) exhibits the following useful characteristics, when used for minor operations or as an adjuvant to ether.

(A) **GRADUATED KELENE** will anaesthetize the patient in 1 to 2 minutes.

(B) It does not induce nausea or vomiting or any untoward disturbances of the functions.

(C) As an adjuvant to Ether, it is superior to Nitrous Oxide.

(D) It insures thorough insensibility to pain.

(E) With Kelene there is an entire absence of disagreeable effects co-incident with other anaesthetics. There is no difficulty in breathing, no struggling or any other unpleasant effects.

(F) Restoration to consciousness is normal, rapid and complete.

(G) For children, obstetrical practice, curettage diagnostic examination, its use is preferable to other anaesthetic agents.

(H) Subsequent anaesthesia with Ether is better maintained and tolerated by the preliminary employment of

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(I) It is convenient, portable, safe, satisfactory and economical.

At a meeting of the New York Academy, January 14, 1901, a distinguished Surgeon reported that he had used **GRADUATED KELENE** as a general anaesthetic in over 200 operations In no instance was there a failure or any untoward symptoms. In his opinion it was much superior to Nitrous Oxide gas by reason of the fact that it did not produce cyanosis nausea and on account of the small quantity necessary to secure rapid and perfect narcosis; besides he thought it more safe and economical than any other similar agent he had employed.

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Clinical Reports from leading American and European authorities will be sent upon application to

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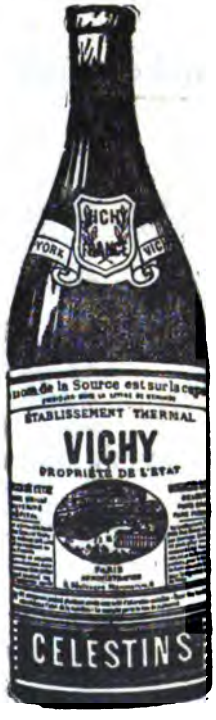

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Promotes more active endosmose, neutralizes and washes out of the system all incompletely burnt bodies.

To give the name of Vichy water to a mere solution of bicarbonate of soda is as great an abuse of language as to give the name of wine to a mixture of cream of tartar, alcohol, and mineral salts, which wine furnishes when analysed.

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They are so tough they may be run over 2000 revolutions per minute.

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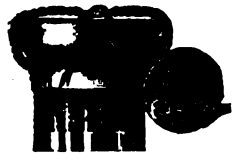

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